

HUNTERS POINT SHIPYARD PARCEL A

ENVIRONMENTAL ISSUES

November 1, 2004

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INTRODUCTION

The federal government closed the Hunters Point Naval Shipyard (HPS) in 1974. In 1989 the United States Environmental Protection Agency (USEPA) listed the HPS on the National Priorities List, commonly known as "Superfund." In 1991, the applicable state and federal regulators identified Parcel A as the "cleanest" parcel on the HPS and the parcel most likely to be first transferred back into productive use. In 1999, Parcel A was "delisted" from the Superfund list based on the USEPA's determination that no further environmental remediation was needed for this site.

Notwithstanding these early assessments that Parcel A was a relatively clean site, the Navy, the City and federal and state regulators have spent an enormous amount of resources over the last 10 years confirming that Parcel A is indeed safe for residential reuse. As a result of the application of environmental laws, the environmental conditions on Parcel A have been closely analyzed for more than 14 years. After 14 years of careful study, all of the relevant federal, state and local environmental agencies agree that it is safe for the Navy to transfer Parcel A to the San Francisco Redevelopment Agency (SFRA) for residential reuse.

Separate and apart from the formal Superfund process governing Parcel A, the SFRA and the City have independently confirmed the conclusions of the state and federal regulators. Specifically, the City and the SFRA have retained the services of a variety of independent environmental experts to review the work of the Navy and the state and federal regulators, including a world-renowned expert in the field of radiological contamination. These reviews and analyses, included, among other things, whether methane gas or contaminated groundwater plumes could migrate to impact new residences on Parcel A and whether Parcel A had been impacted by radiological contamination. In every instance, these experts have agreed with the conclusions of the regulators that it is safe for the Navy to transfer Parcel A to the SFRA for residential reuse.

On top of these multiple layers of federal, state and local environmental review, a variety of new City laws will specifically govern environmental issues related to the development of Parcel A. These new City laws have been carefully designed to ensure that development activities at the HPS are closely monitored and that, if hazardous materials are encountered, adequate procedures and protocols are in place to ensure that such contaminants are dealt with quickly and safely. These laws also require any developer at the HPS to follow a variety of rules and regulations regarding construction activities, including rules that control dust and other typical impacts from construction.

Finally, if unexpected environmental conditions are encountered after Parcel A has been transferred by the Navy to the SFRA, the Navy remains legally responsible for cleaning up such contamination. As further protection, the SFRA--through its developer--has procured an environmental insurance policy that will require the insurance company to pay to remediate any such contamination. The insurance coverage is intended to respond quickly to any unforeseen environmental problems, thereby allowing development to proceed while the insurance company, instead of the SFRA, prosecutes any claims against the Navy.

Set forth below is a detailed description of the environmental analysis and remediation of Parcel A that has occurred over the last 14 years and the various technical bases for concluding that it is indeed safe for the Navy to transfer Parcel A to the SFRA for residential reuse.

I. EXECUTIVE SUMMARY.

The following presents a summary of the key conclusions of this paper.

- Navy's Cleanup and Regulator Concurrence. After more than 10 years of site characterization and monitoring activities, the Navy has determined that Parcel A is suitable for transfer to the Agency for residential and open space uses as contemplated in the Redevelopment Plan. The USEPA and the California Environmental Protection Agency, represented by the California Department of Toxic Substances Control and the San Francisco Bay Regional Water Quality Control Board, concur with the Navy's determination. Taking all this into account, as well as conducting its own extensive due diligence, the Agency, with the help of City staff and a team of outside experts, has concluded that it is safe for the Agency to accept the conveyance of Parcel A and for Parcel A to be developed for residential use.

The Navy's and Regulators' conclusions about the environmental conditions of Parcel A are based on three primary technical documents: (i) the 1995 No Action Record of Decision for Parcel A; (ii) the Draft Final Historical Radiological Assessment, Volume II Use of General Radioactive Materials 1939-2003; and (iii) and the September 14, 2004 FOST, which received concurrence by the USEPA and state regulators. Together, these reports document the Navy's investigation, findings and conclusions that it is safe to reuse Parcel A for residential use. These documents also assessed whether transfer and development of Parcel A could be affected by contamination and ongoing cleanup on adjacent parcels and concluded that it would not. These documents were subject to regulator and public comment, by individuals and organizations, such as the Navy's Restoration Advisory Board and the HPS Citizen's Advisory Committee. The Navy responded to all comments.

- Navy's Covenants and Deed Restrictions. As required by federal law, in the deed for Parcel A, the Navy will covenant that: (i) all remedial action necessary to protect human health and the environment with respect to any hazardous substance remaining on Parcel A has been taken before the date of transfer; and (ii) any additional remedial action found to be necessary after the date of transfer (i.e., because of the discovery of previously unknown contamination) shall be conducted by the United States. The Parcel A deed will also contain requirements relating to notification of potential groundwater contamination and demolition and proper handling of structures that may contain asbestos materials and lead-based paint. The developer must address any contamination from these sources prior to occupancy. These additional requirements will ensure that subsequent owners will have notice of these potential issues and comply with law, but do not prevent Parcel A from being used for unrestricted residential purposes.

- Navy/Agency Conveyance Agreement and Regulator Concurrence. In April 2004, the Agency and the Navy entered into a Conveyance Agreement for the Shipyard. The Conveyance Agreement did not transfer property. It did establish the mechanisms, terms and conditions for the Navy to offer remediated parcels of the Shipyard to Agency. The Conveyance Agreement prohibits the Navy from offering any property to the Agency until after the Regulators have provided written assurances that the property is safe for its intended use. For Parcel A, this means that the entire parcel must be determined to be safe for residential purposes. The Regulators have made this determination, and the Agency has independently verified the Regulators' concurrence with the assistance of City staff and independent environmental experts.

- Navy's Indemnity. As acknowledged in the Conveyance Agreement and in accordance with federal law, the Navy will forever indemnify subsequent owners and retain liability for unknown or newly discovered hazardous materials at the Shipyard, even after the transfer to the Agency and subsequent transfer(s) to developers.
- Requirements After Transfer. Once Parcel A is owned and controlled by the Agency, additional safeguards will be in place to ensure the appropriateness and safety of Parcel A for residential uses and to address any outstanding concerns. Through the multiple layers of agreements, laws and regulations, the Agency and the City will be able to enforce the various applicable requirements by mandating activities, reporting, protocols and plans. In this manner, the Agency and the City can ensure that subsequent owners and developers monitor and maintain the condition of Parcel A and that it remains safe for unrestricted residential use.
- Requirements of the Disposition and Development Agreement. In December 2003, the Agency entered into a Disposition and Development Agreement with Lennar/BVHP, LLC governing the development of Phase I of the Shipyard project, which includes portions of Parcel A. This agreement requires the developer to comply with: the measures to mitigate or lessen the impacts that will result from reuse of Shipyard established in the Hunters Point Shipyard Reuse Final Environmental Impact Report (FEIR Mitigation Measures); the conditions and requirements in the Navy deed (deed restrictions); and other applicable laws. The developer also agreed to work with the Agency and the City to enact a new ordinance that would impose and implement these requirements.
- Requirements of City Ordinance. A new City ordinance, Article 31 of the Health Code, would make compliance with deed restrictions, certain FEIR Mitigation Measures, and other City laws mandatory and enforceable. This ordinance with its companion ordinances will be a comprehensive tool for the SF Department of Public Health to ensure that construction and development proceed safely in light of environmental conditions on Parcel A. A person must comply with the ordinance in order to obtain a City building, grading or other permit or improvement plan approval that involves soil disturbance. The ordinance will set forth very detailed steps to allow the City to closely monitor development on Parcel A and confirm that conditions remain safe. The ordinance will also authorize the City to impose protective measures, such as periodic gas monitoring, in areas within 1,000 feet of old disposal sites where construction could pose a threat to health and safety. These protective measures will become a condition of a permit or improvement plan enforceable by the City. Article 31 will also address and require planning for unknown conditions and contingencies and ensure that new information is collected and added to the City's Geographic Information System (GIS) database for the Shipyard. Article 31 establishes several enforcement mechanisms, including withholding or denial of a permit, an order to stop work, penalties for permit violations and monetary administrative and civil penalties.
- Environmental Insurance Policy. To reinforce the Navy's covenants and indemnity, the Agency and the City will be covered by a pollution liability insurance policy that will further shield them from potential liability. For Parcel A, the Agency, the City and Lennar/BVHP will be covered by a \$25 million pollution legal liability policy for a ten year term. The policy will cover costs associated with: (i) remediation of previously unknown environmental contamination above actionable levels that is discovered following transfer to the Agency; (ii) third party claims, including "toxic tort" claims, against the Agency and/or its agents; and (iii) remediation costs arising from regulatory changes that necessitate additional cleanup on parcels that have already been conveyed by the Navy. AIG Environmental, the insurance company providing a package

of environmental liability policies insurance to the Agency, City and developer conducted its own due diligence and determined that it was appropriate to offer coverage for the parcel understanding that it would be used for unrestricted residential use.

- Other Generally Applicable Environmental Laws. In addition to the specific new requirements discussed above, environmental protection laws that apply generally to construction and development will apply at the Shipyard just as they would at any other project. These laws include: laws relating to storm water management; dust control; worker health and safety; and biological and resources management.

- Specific Issues. Several specific issues have been raised by the community, the Regulators, the Agency, the City, Lennar/BVHP and other interested parties regarding potential residual contamination, unknown or changed conditions and adverse conditions created by cleanup, construction or development activities. The Agency, the City and their consultants have reviewed these issues and conclude that each of these issues have been addressed through the processes, agreements and laws discussed above or can be adequately addressed through reference to general law and processes. The issues include:

- Landfill gases, including methane, are being generated by the old landfill on Parcel E. As a result of the Navy's studies and installation of a gas control system, this risk has been properly addressed and the landfill gases do not pose a hazard to development on Parcel A. No methane has ever been detected in the permanent gas monitoring probes on Crisp Avenue either before or after installation of the Parcel E landfill gas monitoring and control system. To address the contingency that landfill gas could migrate to Parcel A in the future, the new City Article 31 ordinance will require the DPH Director to review existing conditions, and if necessary, impose requirements to address any threat to human health and safety at the time of construction and development.

- Sand blast grit (or "abrasive blast material") was discovered in backfill in two locations on Parcel A. Two types of contamination issues can arise from reuse of spent abrasive blast material. It can contain elevated levels of metals from the paint on ships and/or low levels of naturally-occurring radionuclides, which may be concentrated during the manufacturing process. Despite these two occurrences, there is no evidence that backfilling was a routine practice at Shipyard or Parcel A and the regulatory agencies required no further investigation of this issue. The new City Article 31 ordinance will specifically require protocols for unknowns, such as abrasive blast material, and will require contractors to look for and properly manage abrasive blast material when working in former utility areas. Any future remediation necessary due to a discovery of additional abrasive blast material must be conducted by the United States under the Navy's covenant and indemnification.

- In addition to landfill gas migration, two other concerns have been raised about "adjacency" issues--the potential for harm to persons on Parcel A because of conditions and activities on other parcels. The two concerns focus on groundwater contamination migrating onto Parcel A from other parcels and dust emissions during remediation of adjacent parcels. Based on the conclusions of the Navy, the Regulators and Agency's independent environmental consultant, no contaminated groundwater has or will likely migrate to Parcel A and appropriate controls are in place to require the Navy to control its dust emissions. A combination of local, state and federal agencies will continue to monitor these conditions and take action if conditions change.

- Another concern is dust generated on Parcel A from construction and

development activities. In addition to general state laws, there are several overlapping mechanisms in place to prevent uncontrolled dust from becoming a problem, including the FEIR Mitigation Measures, conditions of the Disposition and Development Agreement and provisions of Article 31 and its regulations, which are enforceable by the Agency and the City. The necessary rules and enforcement mechanisms therefore are in place to ensure control of dust from development activities on Parcel A.

- Lead-based paint in soil has also been raised as a concern. Based on existing data; the deed restriction imposing obligations on any subsequent owners; and the ability for the City to enforce this obligation as a pre-condition to obtaining an occupancy permit under Article 31, adequate mechanisms are in place to ensure compliance with law and protection of health and safety with respect to any threat posed by lead-based paint.

II. FEDERAL ENVIRONMENTAL REQUIREMENTS.

This section describes the federal environmental laws governing the cleanup of Parcel A, and describes processes governing the investigation, cleanup and transfer of Parcel A.

A. Federal Superfund Law Process and Findings.

Contamination at the HPS is subject to regulation and cleanup under the Comprehensive Environmental Response, Compensation and Liability Act (Superfund or CERCLA), the Toxic Substances Control Act (TSCA) (for polychlorinated biphenyl [PCB] sites), the California Porter-Cologne Water Quality Control Act (for petroleum constituents) and other similar federal and state environmental laws. As a result, of the application of these laws, the environmental conditions of Parcel A have been carefully scrutinized. Attachment A provides a map of Parcel A.

The Navy began to conduct environmental investigations at HPS in the late 1980s. In 1989, the USEPA listed HPS on the National Priorities List (NPL or "Superfund list"). In 1991, the Navy, USEPA, and the State of California, through the California Environmental Protection Agency (Cal/EPA), entered into a Federal Facilities Agreement (FFA) which spells out the Navy's responsibilities and the USEPA and state's oversight roles regarding cleanup of the HPS. The FFA includes a parcel-by-parcel cleanup schedule.

Under the FFA, the USEPA is the lead regulatory agency responsible for overseeing the Navy's cleanup and both the California Department of Toxic Substances Control (DTSC) and the San Francisco Bay Regional Water Quality Control Board (RWQCB) have oversight roles. DTSC is the state agency with lead jurisdiction over hazardous substances contamination and the RWQCB has jurisdiction to protect the waters of the state. DTSC is the primary state regulator for Parcel A. Throughout this paper, USEPA, DTSC and the RWQCB are referred to as the "regulators." From time to time, other regulatory agencies have become involved in oversight activities. When this is the case, these oversight agencies will be specifically mentioned.

CERCLA and its regulations set forth a highly-regulated, step-by-step process for the investigation and remediation of Superfund sites like the HPS. Under this process, the Navy conducted investigations for Parcel A from 1984 through 1994. In addition to the Parcel-wide Preliminary Assessment, the Navy conducted 10 site-specific Parcel A investigations. The site-specific areas and types of contaminants the Navy investigated are listed in the table in Attachment B.

The Navy published a Draft Final Parcel A Remedial Investigation Report in September 1995. Based on the findings in the Remedial Investigation report, the Navy issued a Record of Decision (ROD) in 1995 for Parcel A finding that, "based on an evaluation of analytical data and other information, the Navy has determined that no remedial action is necessary to ensure the protection of human health and the environment at Parcel A." A ROD with this finding is commonly referred to as a "No Action" ROD. The USEPA, DTSC and the RWQCB concurred with the Navy's determination in the No Action ROD that no remediation was required for Parcel A. In further recognition of the status of Parcel A as a relatively clean site, the USEPA removed (or "delisted") Parcel A from the NPL in April 1999.

B. The Finding of Suitability to Transfer (FOST) for Parcel A.

Under Department of Defense (DoD) policy and to satisfy requirements of CERCLA, the Navy prepared a draft Finding of Suitability to Transfer (FOST) for Parcel A. The FOST is a determination by the Navy that the environmental conditions of the property makes it suitable for transfer. A final, signed FOST by the Navy is necessary for the Navy to transfer Parcel A. Moreover, any future work or development on Parcel A will remain subject to any prospective requirements imposed by the FOST and all state and federal laws that impose requirements on activities involving discovery, disturbance and cleanup of contamination and protection of human health, safety and the environment. The Navy issued the Draft Final FOST on September 1, 2004. The USEPA, DTSC and RWQCB concurred with the Navy's determination that all remedial action necessary to protect human health with respect to any hazardous substances remaining on Parcel A has been taken. Attachments C, D, and E. DPH also expressed agreement with the Navy's FOST process. Attachment F. After obtaining regulator concurrence, the Navy signed the FOST on October 14, 2004. The FOST process findings and specific continuing obligations are discussed below.

1. The CERCLA Covenants.

One of the benefits to local reuse authorities (such as the SFRA) of the base closure process is that the federal government is required to transfer property subject to the CERCLA section 120(h). CERCLA Section 120(h) requires the federal government to provide notice and assurances when transferring property on which hazardous substances are known to have been released. These notices and assurances are commonly referred to as the "CERCLA Covenants." In transferring Parcel A, the Navy must covenant (or pledge) that (A) the property has been cleaned to a level that is protective of human health and the community and (B) if additional remedial action is found to be necessary after the date of such transfer (i.e., because of the discovery of previously unknown contamination) the Navy will be responsible for completing any required cleanup. To make the covenant required by (A), under DoD policy, the Navy prepares a FOST. The FOST summarizes all the environmental conditions on a property and assures the buyer that the property is ready for transfer. As discussed below, the Parcel A FOST concludes that Parcel A is environmentally suitable for transfer for its intended residential reuse.

In connection with a transfer of property, CERCLA and its implementing regulations also require the Navy to provide (1) notice of the type and quantity of known hazardous substances; (2) notice of the time the storage, release, or disposal took place; and (3) a description of the remedial action taken, if any. In the deeds for Parcel A, the

Navy states that it has made a complete search of its files and records concerning Parcel A and that the FOST provides the required notice and information.

2. Survey of Environmental Conditions.

The Navy began the FOST process for Parcel A in 1996 by conducting an environmental baseline survey. The Navy issued the results of that survey in a document entitled the Final Basewide Environmental Baseline Survey, Revision 01 dated September 4, 1998. This survey contains detailed information about Parcel A that was later summarized in the FOST.

After several revisions of the draft FOST, the Navy issued the draft Final FOST Revision 3 on September 1, 2004. In addition to the sites that were investigated under the ROD process (see Attachment B), the following conditions were among those investigated and reported in the FOST:

a. Underground Storage Tanks None on Parcel A.

b. Aboveground Storage Tank. Neither the 106,000-gallon water tank nor the 1,000 gallon propane tank poses a threat to human health or the environment.

c. Radioactive Contaminants in Buildings. The Navy conducted radiological investigations at Buildings 816, 821 and 322. All three sites have been determined by the California Department of Health Services (CaDHS) to not present a radiological threat. Buildings 816 and 821 were cleared in August 2001 and November 2002, respectively. Building 322 was used as a research facility while located in Parcel D and was later moved to Parcel A. Building 322 was demolished and removed from the HPS in June 2004. USEPA conducted a radiological confirmation survey and confirmed the conclusion of CaDHS that there is no radiological contamination impacting the environment of HPS due to activities previously conducted at the former Building 322 site. Clearance from CaDHS for Building 322 is attached as Attachment G. Section (II)(C) below provides a full discussion of potential radiological issues.

d. Small-Caliber Munitions. No munitions or ordnance remain on the property.

e. Off-Parcel Issues. The Navy and the regulators assessed whether there is a potential for contaminants from other parcels to migrate onto Parcel A. The Navy and the regulators considered three possible pathways for contamination to migrate to Parcel A: (1) as subsurface gases (from the Parcel E landfill or Installation Restoration Site 74, the former gas station on the adjacent Formerly Used Defense Site); (2) in groundwater; and (3) as dust emissions during remediation of adjacent parcels. The Navy addressed each of these pathways in the FOST and concluded that contaminants are not currently migrating as subsurface gases, in groundwater or as dust emissions. In the future, a combination of regulatory agencies will continue to monitor these conditions and verify that they are not a problem or take action if conditions change. The City's assessment of potential contamination from adjacent parcels is discussed below in Sections VII(D) and (F).

In addition to experts on City staff, the SFRA hired Treadwell & Rollo, a professional environmental consulting company, to conduct an independent review of information pertaining to subsurface gases and groundwater migration onto Parcel A.

Treadwell & Rollo concurs with the conclusion that methane has not migrated to Parcel A and is unlikely to migrate to Parcel A in the future. Treadwell & Rollo also concludes that contaminated groundwater from other parcels does not pose an unacceptable risk to future residents of Parcel A. Treadwell & Rollo's letter report and statement of experience are included as Attachment H.

f. **PCBs.** The Navy has removed all transformers and oil circuit breakers containing greater than 5 parts per million of PCBs. All PCB-containing oil stains in Buildings 100, 101 and 821 have been remediated. Remaining transformers and oil circuit breakers on Parcel A do not contain PCBs.

g. **Petroleum Motor Oil.** Motor oil was detected in the groundwater at two locations, near Building 101 and under Jerrold Avenue, at concentrations less than 600 parts per billion. No further investigation, remediation or monitoring is required. As discussed in Section II(B)(3)(a) below, the Parcel A deed will contain a notice about this finding.

h. **Asbestos Containing Materials.** See discussion below in Section II(B)(3)(c).

i. **Lead-Based Paint.** See discussion below in Section II(B)(3)(b).

j. **Abrasive Blast Material (ABM).** According to the FOST, the Navy discovered ABM that had been used as bedding material for a sanitary sewer main during its Installation Restoration (IR) Site 59 Jerrold Avenue investigation. The Navy excavated ABM until confirmation samples collected from the excavation area and analyzed for semivolatile organic compounds, pesticides, PCBs, petroleum and metals contained minimal concentrations of any chemicals of concern. The Navy also analyzed ABM collected from Parcel B for evidence of naturally-occurring radioactivity. There was no radiological hazard associated with the ABM on Parcel B. Due to this occurrence of ABM on Parcel A, the Navy acknowledges that ABM may have been used elsewhere in Parcel A as bedding material for piping and, therefore, additional ABM could be discovered in the future, but it is difficult to predict if and where it might have been used. ABM is discussed below in Section VII(C).

3. Deed Notices and Requirements.

As part of the finding that the property is suitable for transfer, a FOST often specifies that the deed conveying the property must include special notices and requirements related to the environmental condition of the property. Under state law, these notices and restrictions "run with the land," apply to every subsequent owner of the property and are enforceable by the entity that included them in the deed—in this case, the Navy. See Cal. Code of Civil Procedure § 1471. By virtue of being recorded, deed notices and restrictions are a matter of public record. The FOST for Parcel A includes several deed notices and restrictions which are summarized below. These notices and restrictions are necessary to ensure the dissemination of critical information about the conditions of the property to subsequent owners and other users of Parcel A and to address residual hazardous substances that the regulators believe can be safely left in place subject to the restrictions. The following notices and restrictions are included in the deed transferring Parcel A to the SFRA. These notices and restrictions place certain requirements on future owners and developers, but do not prevent Parcel A from being redeveloped for unrestricted residential reuse.

a. Groundwater notice.

The FOST concludes that the results of the remedial investigation indicate that no further investigation, remediation or monitoring of the groundwater underlying Parcel A is required. However, because low concentrations of motor oil were found in groundwater in two isolated locations beneath Parcel A, the FOST contains a deed notice to this effect. The deed also acknowledges that City policy precludes the use of groundwater, which further protects human health from any potential risks associated with the residual petroleum groundwater contamination.

b. Lead-Based Paint (LBP).

As with the majority of pre-1978 buildings, a number of buildings on Parcel A were painted with lead-based paint. None of the residential buildings in Parcel A are currently occupied, and none are intended to be reused for residential purposes. Based on the Navy's sampling efforts, the FOST concluded that lead in soil from lead-based paint does not pose a risk to human health, and no further action is required to protect human health because the average concentration of lead in soils across Parcel A is below the applicable cleanup standard. However, the FOST requires a deed notice and a deed restriction for LBP.

The deed prohibits the use of structures on Parcel A containing LBP for residential or child-occupied facilities. This will not be an issue because all residential and childcare facilities on Parcel A will be in new structures. The deed also requires the new owner to conduct soil sampling, including sampling soil for lead, after demolition of LBP-containing structures and before grading and to remove demolition debris in accordance with DoD policy. Soil sampling and any necessary abatement action must be completed before any new structures are occupied.

DTSC and the San Francisco Department of Public Health (DPH) have further discussed the details of implementation of the deed restriction, as explained in DPH's September 30, 2004 letter to DTSC at Attachment I. DTSC and DPH agree that the deed restriction requires sampling in areas where new residential structures will be constructed, specifically: sampling around steel structures, such as the water tank; sampling around foundations of previously demolished structures in Parcel A West; sampling after demolition of existing Navy structures regardless of whether those structures were residential; and in all cases, sampling must take place after demolition and before grading. DPH will enforce these requirements pursuant to existing authority and a new City ordinance discussed below in Section IV(C).

The LBP notice requirement provides information about the hazards of lead paint on residential dwellings built before 1978 and notice that lead poisoning is a particular risk for young children and pregnant women. Since the restriction bans the reuse of existing structures with LBP and occupancy of new structures until soil abatement is complete, these populations will not be exposed. The notice further provides that any subsequent owner of the property will be responsible for managing LBP in compliance with all applicable federal, state, and local laws and regulations.

c. Asbestos Containing Materials (ACM).

Due to the presence of ACM in structures on Parcel A, the FOST requires the deed to include a notification and other requirements pertaining to ACM. The Navy collected detailed asbestos survey data regarding the presence of ACM in buildings on Parcel A and has repaired, encapsulated and removed ACM debris in numerous Parcel A buildings. As a result, the FOST concludes that ACM in Parcel A currently poses no risk to human health or the environment.

The deed notice states that ACM is present in the buildings and structures on Parcel A, that the location and condition of known ACM is documented in specific reports, and the deed will prohibit the use of these structures or piping. In the covenant regarding ACM, future owners and developers are responsible for managing ACM and for complying with all applicable federal, state, and local laws relating to ACM, including when demolishing or handling buildings or utilities containing ACM. The Navy assumes no liability of any kind for ACM in the existing improvements on Parcel A.

C. Radiological Issues.

Hunters Point Shipyard has a long history of use of radiological materials, though not on Parcel A. Although some radiological issues arose after the issuance of the Parcel A ROD and Parcel A Superfund delisting, the approval of the FOST for Parcel A by the regulators covers all contamination issues, including radiological contamination. Pursuant to CERCLA, much of the information concerning potential radiological issues was developed and reported by the Navy in the Draft Final Historical Radiological Assessment, Volume II Use of General Radioactive Materials, 1939-2003 (HRA). A special unit of the Navy, called the Radiological Affairs Support Office (RASO) prepared the HRA. The overall conclusion of the HRA is that low levels of radioactive contamination exist within the HPS, but that these levels are so low that HPS tenants, future residents, the surrounding community, and the environment are not at risk.

The conclusions of the Navy and regulators with respect to Parcel A are summarized below. As an additional measure of assurance, the SFRA hired its own experts, Tom Widner, a health physicist and industrial hygienist with Chemrisk, and Dr. Lynn Anspaugh, Ph.D, an international expert in radiological issues, to conduct a thorough review of all radiological issues for Parcel A. Mr. Widner concluded that there are no radiological concerns on Parcel A or in adjacent areas that could affect the transfer or use of Parcel A. Mr. Widner's resume and letter report are included as Attachment J. Dr. Anspaugh has reviewed and agrees with Mr. Widner's conclusions; his resume and letter report are in Attachment K.

Following is a summary of Parcel A radiological issues, with Mr. Widner's conclusions:

- Buildings 322, 816 and 821 were the only buildings on Parcel A identified as having the potential for radioactive contamination based on historical information. Of these three buildings, only Building 816 had some contamination that was cleaned up in the past. Though Buildings 322 and 821 had the potential for contamination, on further investigation, no contamination was found. Building 322 was demolished in June 2004. All three building sites have been evaluated and cleared by RASO. In addition, the CaDHS, the state agency that has the authority to release buildings for unrestricted use,

has released all three building sites. Mr. Widner supports this conclusion and specifically states that these three building sites will "pose no radiological health hazard to future occupants of the area."

- Other potential areas of concern on Parcel A have been the sewers, storm drains and groundwater. The storm drains and sewers associated with Building 816, the only building with previous radiological clean-up actions, are outside Parcel A and are being investigated as part of the Crisp Avenue sewer investigation on Parcel E. The other storm drain and sewer lines on Parcel A are not considered radiologically impacted because there were no operations involving radioactive materials within the upland area of Parcel A. RASO has concluded that the sewers, storm drains and groundwater on Parcel A do not contain radiological contamination and no further investigation is warranted. In concurring with the FOST, the regulators have also agreed with RASO's opinion. Mr. Widner and Dr. Anspaugh also agree with this conclusion.
- As an added measure of assurance that the Navy's radiological investigation and cleanup of Parcel A were completed, the USEPA conducted a parcel- wide scan with the radiological scanner van in September 2002. The scanner van survey verified that no residual radiological contamination is remaining on the surveyed areas of Parcel A. Mr. Widner and Dr. Anspaugh agree with the USEPA results.

D. Public Participation.

CERCLA requires public participation. The Navy has a comprehensive community involvement program as part of its environmental cleanup. It established and holds monthly Restoration Advisory Board (RAB) meetings to present information about the cleanup program and solicit information and advice from community board members and the public at large. The Hunters Point Shipyard Citizens Advisory Committee (CAC) advises the Mayor, the Board of Supervisors and the SFRA on matters regarding the HPS. The CAC's environmental subcommittee focuses on issues related to the cleanup of the HPS. The Navy regularly briefs the environmental subcommittee of the CAC and the full CAC on cleanup issues. In addition, the Navy routinely issues Fact Sheets and supplements the monthly RAB meetings with additional community workshops when necessary. The Navy has issued multiple revisions of both the ROD and the FOST for Parcel A, each of which was subject to public comment by individuals as well as comments by the regulators, the SFRA and other regulatory agencies. The Navy considered and responded to all specific comments on the ROD and the FOST.

The Navy also solicited public comments on the HRA and addressed all public comments in addition to presenting information at several RAB meetings.

E. Summary.

The Navy investigated potential contamination issues on Parcel A and concluded in its ROD that no threat to human health or the environment exists. The regulators concurred and USEPA removed Parcel A from the Superfund list. Subsequently, the Navy analyzed additional potential concerns, including radiological issues, through the FOST process and concluded that (A) all remedial action necessary to protect human health and the environment with respect to any hazardous substance remaining on the property has been taken before the date of transfer, and (B) any additional remedial action found to be necessary after the date of transfer shall be conducted by the United States. Federal, state and local regulators have carefully monitored and analyzed the Navy's work over the past decade. These federal and state regulators, DPH and the City's and the SFRA's expert consultants all agree that it is safe for the Navy to transfer Parcel A to the SFRA for residential reuse.

III. NAVY TRANSFER TO SAN FRANCISCO REDEVELOPMENT AGENCY.

In 1997, through a public process, the SFRA and City Board of Supervisors adopted the Redevelopment Plan for HPS. The Redevelopment Plan shows primarily residential and open space uses for Parcel A. This section discusses the pre-requisite cleanup standards and conditions for the Navy to transfer Parcel A to the SFRA, and the documents supporting the transfer.

A. Proposition P.

The Navy is required to take community acceptance into account in its cleanup decisions. On November 7, 2000, the voters of San Francisco passed Proposition P, which calls upon the Navy to remediate HPS to the highest levels practical to assure the flexible reuse of the property. On July 30, 2001, the City's Board of Supervisors unanimously passed a resolution implementing Proposition P, confirming, as the policy of the City, that HPS should be cleaned of toxics to the highest practical levels. As explained below, the Navy will transfer Parcel A to the SFRA in the cleanest practicable condition and thus, comply with Proposition P.

B. The Navy/SFRA Conveyance Agreement.

Section 2824(a) of the National Defense Authority Act for Fiscal Year 1991, as amended, authorized the Navy to convey HPS to the SFRA at no cost. After years of negotiations and extensive public review, including several workshops and SFRA meetings, on March 31, 2004, the SFRA and the Navy entered into a Conveyance Agreement. The Conveyance Agreement establishes the mechanism, terms and conditions for the Navy to offer remediated parcels of the HPS to SFRA. The Conveyance Agreement did not itself transfer any property to the SFRA but, instead, sets forth the process by which property can be conveyed. The Conveyance Agreement provides for the phased transfer of parcels, or portions of parcels, as the Navy completes environmental remediation and issues FOSTs for those parcels. The Conveyance Agreement also gives the SFRA the right to conduct independent tests to confirm the conclusions of the regulators.

Under the Conveyance Agreement, the Navy cannot even offer property to the SFRA unless the regulators concur that such property has been safely remediated for its intended use. Because Parcel A is slated for residential reuse, the Navy must secure assurance from the regulators that the parcel can be safely used for that purpose. The regulators' concurrence letters are attached as Attachments C, D and E. These statements provide assurances that the regulators have reviewed all the environmental conditions of Parcel A and deem it to be safe for residential development.

Section 330 of the Fiscal Year 1993 Defense Reauthorization Act requires the DoD to hold harmless and indemnify persons who acquire ownership or control of any facility at a military installation that is closing or closed pursuant to a base closure law from any claim for personal injury or property damage that results from the release or threatened release of any hazardous substance, pollutant or contaminant, or petroleum or petroleum derivatives as a result of DoD activities. This environmental indemnity from the Navy is in addition to the Navy's covenant (described in Section II(B) above) that it will perform any additional remediation found to be necessary after transfer, e.g., because

a previously unknown environmental condition resulting from Navy activities is discovered. In accordance with these statutory indemnification and additional cleanup obligations, the Conveyance Agreement does not transfer any environmental cleanup responsibility to the SFRA. Instead, the Navy forever retains liability for unknown or newly discovered hazardous materials at the HPS, even after the transfer of such parcels to the SFRA. The Conveyance Agreement acknowledges the Navy's obligation to indemnify subsequent owners of the HPS and affirms that the Navy's indemnity obligations will not be affected by the existence of private insurance. To reinforce those protections, the SFRA requires the developer to acquire pollution liability insurance policies that will further shield it, the City and the developer from potential liability. Environmental insurance for Parcel A is discussed in Section V.

Another cornerstone of the Conveyance Agreement is the collaborative partnership it forms between the Navy and the SFRA/City on issues related to cleanup. This partnership grants to the SFRA/City broad access to, and participation in, the cleanup process. While the Navy retains legal responsibility for the cleanup under federal law, the Conveyance Agreement requires the Navy to work closely with the City and the SFRA in finding appropriate solutions to environmental problems by including them earlier and more often in the Navy's decision-making processes. Significant cooperation pursuant to this collaborative partnership has already been demonstrated at the HPS with regard to Parcel A, as evidenced by Navy and SFRA/City cooperation with regard to Parcel A FOST comments and other important environmental matters relevant to Parcel A.

The Conveyance Agreement provides that the Navy may offer HPS parcels to the SFRA only after a number of specific conditions ("Closing Conditions") have been satisfied by the Navy. The Closing Conditions for Parcel A include the following:

- The Conveyance Agreement prohibits the Navy from offering any property to the SFRA until after the regulators have provided written assurances that the property is safe for its intended use. As noted above, the regulators have concurred with the Navy's FOST.
- The property conditions on Parcel A must allow full implementation of the Redevelopment Plan. For Parcel A, this means that the entire Parcel must be determined to be safe for residential purposes.
- The Navy must convey Parcel A to the SFRA without environmental restrictions or notices, except for those reasonably consistent with the ROD and the FOST for Parcel A, such as those discussed above in Section II(B)(3).
- The Navy is not otherwise in material default of any of its material obligations under the Conveyance Agreement related to the transfer of Parcel A.

Specific Closing Conditions for other parcels of the HPS are also set forth in the Conveyance Agreement.

C. Summary.

The Navy is contractually bound to offer to transfer Parcel A to the SFRA only after it has been cleaned to a condition that supports residential reuse. In addition, in conjunction with the CERCLA covenants, the Navy retains, forever, the obligation to indemnify subsequent owners from any claim for personal injury or property damage that

results from the release or threatened release of any hazardous substance, pollutant or contaminant, or petroleum or petroleum derivatives as a result of DoD activities.

The SFRA and its consultants, with the assistance of City, have conducted extensive due diligence to assure itself that Parcel A is safe to transfer and ready for development as anticipated by the Redevelopment Plan. As described above, the Conveyance Agreement contains numerous safeguards designed to ensure the appropriateness and safety of Parcel A for such uses. The fact that the Navy had to obtain regulator sign-off before offering Parcel A for transfer provides added assurance that transfer is appropriate. Once the property is owned and controlled by the SFRA, any outstanding concerns can be adequately addressed through the agreements, insurance, laws, regulations and procedures discussed in the sections below.

IV. ENVIRONMENTAL REQUIREMENTS IMPOSED ON DEVELOPMENT BY SFRA AND THE CITY.

On December 2, 2003, the SFRA Commission authorized a Disposition and Development Agreement governing the development of Phase I of the HPS project (Phase I DDA) with Lennar/BVHP, LLC (Lennar/BVHP). Phase I comprises portions of Parcels A and B including the hilltop area of Parcel A and the south side of the hill and certain flat portions of Parcel B. This section discusses the environmental requirements imposed by the SFRA and the City associated with transfer to and redevelopment of the Phase I portions of Parcel A by Lennar/BVHP and subsequent developers and owners. Specifically, this section discusses the Final Environmental Impact Report as it applies to Parcel A, the Phase I DDA and a proposed new City ordinance applicable to Parcel A.

A. Environmental Impact Statement (EIS) and Final Environmental Impact Report (FEIR) and Addendum.

As required by the National Environmental Policy Act (NEPA), the Navy prepared and published an EIS covering the Navy's disposition and reuse of HPS, including Parcel A on June 16, 2000. The Navy issued a final NEPA ROD on October 16, 2000.

On February 8, 2000, as required by the California Environmental Quality Act (CEQA), the SF Planning Department and the SFRA certified the Hunters Point Shipyard Reuse FEIR. The FEIR analyzes the impacts of reuse of HPS based on the Redevelopment Plan following transfer by the Navy. Also on February 8, 2000, the SFRA adopted findings required by CEQA including measures to mitigate or lessen the impacts that will result from reuse of HPS. These Mitigation Measures, many of which are applicable to Parcel A, are set forth in the Mitigation Monitoring and Reporting Program. Compliance with the Mitigation Measures is a condition of development under the Phase I DDA.

On November 19, 2003, prior to approval of the Phase I DDA (further discussed immediately below), the San Francisco Planning Department and the SFRA published an Addendum to the FEIR which summarized the conclusions presented in the FEIR, analyzed the current Lennar/BVHP Phase I development proposal in light of that information and other information then available and concluded that the analyses conducted and the conclusions reached in the FEIR remain valid.

The requirements of the Mitigation and Monitoring Reporting Program applicable Parcel A are detailed in the matrix found in Attachment L. The matrix explains how each Mitigation Measure will be implemented and enforced. As discussed further below, several of the Mitigation Measures have been duplicated in several different enforceable documents.

B. Phase I Disposition and Development Agreement.

The Phase I DDA represents the culmination of years of work and hundreds of hours of community meetings. The legally binding document details the development requirements and financial terms for the first phase of the infrastructure development and includes the core contract between the SFRA and Lennar/BVHP and a series of attachments that elaborate on the parties' responsibilities and obligations.

Section 20 of the Phase I DDA requires Lennar/BVHP to mitigate significant environmental impacts of development, construction and operation in accordance with the FEIR Mitigation Measures (as listed in Phase I DDA Attachment 11) and the Plan for Environmental Investigation and Remediation During Development at Hunters Point Shipyard (Phase I DDA Attachment 12). Section 20 also requires Lennar/BVHP to comply with all other laws and to pass on the requirements to comply with such laws in any contract or subcontract for development.

Specifically, Attachment 12 requires Lennar/BVHP to comply with:

(1) Mitigation Measures in the FEIR (see § IV(A) and Attachment L);

(2) deed restrictions (see Section II(B)(3)); and

(3) state, local and federal requirements addressing contamination, human health and safety and the environment, including the City's local ordinance governing activities in areas of historic fill codified in the Building Code and Health Code Article 22A (also known as the "Maher ordinance").

Lennar/BVHP also agreed, as a closing condition to the transfer of Parcel A from the SFRA to either work with the City to enact a new ordinance that would impose and implement these requirements or enter into a separate, specific contract with the SFRA including these terms. The proposed ordinance is discussed in detail in Section IV(C) below.

C. Proposed Article 31 and Regulations.

1. Need and Summary.

As discussed above, the Navy is transferring Parcel A to the SFRA in a condition safe for its intended use and in compliance with all laws as approved by the regulators. The SFRA Commission is scheduled to consider an action to, among other things, urge the City to adopt an ordinance, which would become Article 31 of the Health Code, in order to provide additional protection to human health and safety and the environment above and beyond what is required by federal and state law, by enacting both additional substantive requirements and enforcement mechanisms related to construction and development activities at the HPS. The SFRA Commission would also agree to comply with the proposed ordinance. Article 31 and its companion ordinances amending the

Public Works, Subdivision and Building Codes, would incorporate the deed notices and restrictions, Mitigation Measures required by the FEIR and existing City laws not currently applicable to the HPS, into one law enforceable by the City. One of the principal functions of Article 31 is to assure that developers will be alerted to look for contamination, have contingency plans in place to address newly-discovered contamination, and add any new information into the City's overall GIS database for future reference. Article 31 would ensure that Parcel A is, and continues to be, safe for unrestricted residential development. In order to fit Article 31 into the existing City regulatory scheme and institutionalize its requirements, the ordinance would be triggered by the application for a permit for construction activities such as building, grading, and excavating or approval of an improvement plan as required under the Subdivision Map Act.

Specifically, Article 31 will require compliance with the deed restrictions imposed by the FOST. Further, Article 31 will set forth a detailed process to comply with FEIR Mitigation Measure 7.D, and through the regulations, with FEIR Mitigation Measures 2.B, 8.A, 7.D, 7.E, 7.F and 9B. Article 31 will also assure that the HPS is treated in a manner similar to other fill areas in the southeast part of the City by deleting the current exemption for Superfund sites under the "Maher ordinance" and creating an equivalent requirement applicable just to the HPS. In addition, Article 31 will address other concerns raised about development, such as the proximity of the Parcel E landfill and the potential for gas to migrate to Parcel A.

Article 31 will establish a framework for the entire HPS, but for now, it focuses on specific requirements for Parcel A. Article 31 will be amended to add tailored requirements for each additional parcel as it is transferred to the SFRA.

2. Approval Process for Article 31 and Regulations.

Staff of DPH, the SFRA, the Mayor's Office and the SF City Attorney's Office have worked together to draft the proposed Article 31 ordinance and regulations. In preparing the proposal, the staff has consulted with interested members of the community, members of the Navy's RAB, the CAC, federal and state regulators, the San Francisco Department of Public Works (DPW), the San Francisco Department of Building Inspection (DBI), other City officials and Lennar/BVHP. Before being approved by the City's Board of Supervisors, Article 31 and its companion ordinances must be considered at a public meeting and recommended by the following bodies: the SFRA Commission, the San Francisco Building Inspections Commission and the San Francisco Health Commission.

Article 31 will direct the DPH Director to adopt certain implementing regulations. The Health Commission will approve any such regulations and any later amendments upon recommendation by the DPH Director. The initial set of regulations will be considered by the Health Commission at the same time it considers Article 31 for recommendation to the City's Board of Supervisors.

3. Substantive Requirements of Article 31 and Regulations.

This section summarizes the principal requirements that will be imposed by Article 31 and its regulations. Attachment M contains a decision tree/flow chart that shows the significant steps and requirements under Article 31. Article 31 has three basic types of requirements: (i) requirements that must be fulfilled before a permit is issued or an improvement plan is approved; (ii) requirements that become conditions of permits or

improvement plans; and (iii) general requirements. Several enforcement mechanisms are also established, including withholding or denial of a permit or improvement plan approval, an order to stop work, penalties for permit violations and monetary administrative and civil penalties.

a. Requirements as a condition to permit issuance.

In order to obtain a City permit or improvement plan approval from the DBI, DPW or DPH that allows disturbance of soil on Parcel A (including subsurface demolition/deconstruction, subsurface utility installation and maintenance, grading, trenching, pile driving, drilling, soil removal and construction of subsurface structures), an applicant must comply with the steps set forth in Article 31 and regulations, as summarized below.

i. Plans. The applicant must prepare a dust control plan, offsite disposal plan (if disposing of soil off-site), a health and safety plan and a storm water and erosion control plan for submittal to DPH. The regulations set forth minimum standards for each of these plans, as summarized below:

Dust Control Plan. As discussed in more detail below in Section VI(B) and Attachment L, the dust control plan must comply with state and local laws. This includes taking the following measures:

- Seed and water all unpaved, inactive portions of the lot or lots under construction to maintain a grass cover if they are to remain inactive for long periods during building construction;
- Halt all clearing, grading, earthmoving, and excavating activities during periods of sustained strong winds;
- Water or treat all unpaved active portions of the construction site with dust control solutions, twice daily, to minimize windblown dust and dust generated by vehicle traffic;
- Sweep paved portions of the construction site daily or as necessary to control windblown dust and dust generated by vehicle traffic as well as sweep streets adjacent to the construction site as necessary to remove accumulated dust and soil;
- Cover trucks carrying loose soil or sand before they leave the construction site, and limit on-site vehicle speeds to 15 mph or lower in unpaved construction areas; and
- Limit the area subject to excavation, grading or other construction activity at any one time and cover on-site storage piles of loose soil or sand.

Offsite Disposal Plan. This plan will be necessary if the applicant intends to dispose of any soils off-site and must include: a list of landfills and contact information to be used for offsite disposal; and examples of tracking spreadsheets that must include: date of excavation, location of excavation, quantity, soil type, bill of lading or manifest number, transporter and landfill.

Health and Safety Plan. As discussed in more detail in Sections VI(C) and Attachment L, this plan must address the safety and health hazards of each phase of the site operation and include the requirements and procedures for employee protection, including: a health and safety risk or hazard analysis for each activity in the work plan; training requirements; use of engineering controls and equipment; medical surveillance requirements; site control measures; decontamination procedures; an emergency response plan; and a spill containment program. The health and safety plan is designed to protect workers and will also implement the Mitigation Measures and provide another means of continued evaluation of evidence of contamination.

Storm water and Erosion Control Plan. This requirement is discussed in more detail in Section VI(A) and will include the preparation of a Storm Water Pollution Prevention Plan to address potential surface and groundwater impacts from development.

In addition to these plans, several plans must be prepared under the FEIR Mitigation Measures, including the Contingency Plan (Mitigation Measure 7.E) which will include requirements relating to: notice to workers of potential unknown hazards; training and equipment usage; conditions under which work must stop; and procedures for responding to emergencies, such as earthquakes, fires and spills.

ii. Site Evaluation Report. The applicant must submit a site evaluation report describing the proposed work; historical information; prior site characterization and remediation performed by the Navy; or other parties and the condition of the specific area to be disturbed. The applicant must also submit a proposed determination, for review and approval by the DPH Director, as to whether the area to be covered by the permit is adequately characterized. If the area is adequately characterized, the applicant may proceed to obtain a permit or improvement plan approval. If the area is not adequately characterized, the applicant must gather additional information data before the permit can be issued or improvement plan approved. The site evaluation report must also propose soil importation protocols for approval by the DPH Director, if the applicant intends to bring additional fill onto the site.

iii. Tier I areas. Given all the information gathered on Parcel A to date, it is unlikely that any hazardous substances will be found in areas previously used continuously for only residential purposes; areas that are not on historic fill; and areas that have not been used for utility lines. Accordingly, these areas are designated as Tier I, and unless there is evidence that there are hazardous substances present in these areas, the DPH Director will consider these areas to be adequately characterized. This approach is consistent with the existing Article 22A that applies to fill areas in the southeast part of the City. In this case, no more information needs to be gathered and the DPH Director will advise the relevant department that the permit can be issued or improvement plan approved. As a condition of the permit or improvement plan, the permittee must comply with the dust control plan, offsite disposal plan (if applicable), health and safety plan, storm water and erosion control plan, and soil importation plan and must submit a closure report.

iv. Tier II areas. In areas that are not in Tier I, it is possible that unknown hazardous substances are present that the Navy did not discover during its investigations. In these areas, the applicant can seek a determination, for review and approval by the DPH Director, that the area is adequately characterized using one of several methods described in the regulations. The first method is to show that the frequency of prior sampling meets a minimum standard grid size or interval sampling for utilities. If the number of samples is adequate, then the sample results are screened against USEPA Region IX Preliminary Remediation Goals (PRGs) for residential soil, as

established in Table 1 of the regulations. Since the Parcel A ROD was a "no-action" ROD, no cleanup levels were established for Parcel A. PRGs are a conservative tool for use as an initial screen in determining if contamination may exists.

The second method is to show that the only unknown hazardous substances that could be present can be detected through visual observation during the work (excavation or grading). In this case, the applicant may propose to the DPH Director that, instead of conducting additional analytical sampling prior to permit issuance, the applicant use a protocol that sets forth the steps that will be taken to visually identify those hazardous substances during the subsurface activity. Under the regulations, the protocol must include details on the visual identification process; sampling and analysis of hazardous substances when found; management methods; record-keeping and reporting; and other appropriate measures. If the DPH Director agrees that implementation of the protocol will result in adequate characterization, the DPH Director will advise the relevant department that the permit can be issued or improvement plan approved. As a condition of the permit or improvement plan, the permittee must comply with the approved protocol, dust control plan, offsite disposal plan (if applicable), health and safety plan, storm water and erosion control plan, and soil importation plan, and must submit a closure report.

v. Additional investigation. If DPH determines that the area is not adequately characterized and that additional sampling is needed prior to permit issuance or improvement plan, the applicant must submit a work plan to conduct additional sampling and/or information gathering. Once the plan is approved, the applicant must conduct the investigation. If the supplemental investigation shows that there is no existing contamination that exceeds the screening levels, the DPH Director will advise the relevant department that the permit can be issued or improvement plan approved, and the person can proceed with the work, in compliance with the dust control plan, offsite disposal plan (if disposing of soil off-site), health and safety plan, storm water and erosion control plan and soil importation plan and must submit a closure report.

If the supplemental investigation shows that contamination exceeds the screening levels and the applicant wishes to leave it in place, the applicant must prepare a risk assessment report and site mitigation plan (including a dust control plan, offsite disposal plan (if applicable), a health and safety plan, a storm water and erosion control plan and soil importation plan) to demonstrate that the area can be used for unrestricted residential purposes consistent with the FOST. If the DPH Director approves the risk assessment and site mitigation plan, the DPH Director will advise the relevant department that the permit can be issued or improvement plan approved and the person can proceed with the work, in compliance with the site mitigation plan. The applicant must also submit a closure report.

vi. Closure Report. All permittees must prepare and submit a closure report after work authorized under the permit or improvement plan is completed. The closure report must include additional information or data; information on unanticipated conditions; correct any information previously submitted; and verify implementation of the various required plans.

vii. Off-site disposal. If, at any time during this process, the applicant decides to take some or all disturbed soil off-site, the applicant may comply with minimal requirements, but must still prepare and comply with a dust control plan, health and safety plan, disposal plan, storm water and erosion control plan, and soil importation plan, and must submit a closure report.

All of the required reports and plans must be certified by a professional with the qualifications set forth in the regulations.

b. Requirements that will become a condition of a permit or improvement plan.

Compliance with the above requirements will become a condition of a permit or improvement plan. In addition, Article 31 will impose two specific types of requirements that will become a condition of a permit or improvement plan, where they apply:

i. Former Landfill Disposal Sites. This requirement applies to old disposal sites, which are areas where solid waste was intentionally disposed as opposed to areas of the Bay that were created by landfilling activities. If areas being disturbed are on top of old disposal sites or are within 1,000 feet of old disposal sites, and there is evidence that landfill gas migration could pose a threat to public health and safety or the environment due to proposed land uses or structures, compliance with certain protective measures will become a condition of a permit. (As discussed in detail in Section VII(A) below, there is no such evidence of landfill gas migration now; this requirement would be applicable if such evidence emerges in the future.) The types of measures that could apply include: a engineered barrier between the slab and subgrade; venting pipes; automatic methane gas sensors; and/or periodic methane gas monitoring, with reporting requirements and a contingency and mitigation plan. Article 31 will specify that these measures will apply either as a matter of state law or directly as a matter of local law through the adoption of Article 31. The DPH Director will implement this provision in consultation with the California Integrated Waste Management Board (CIWMB), the state agency with jurisdiction over abandoned solid waste landfills, and the Local Enforcement Agency (LEA), the local agency with similar jurisdiction, which is within DPH.

ii. Deed Restrictions. As discussed above, the deed for Parcel A imposes certain deed restrictions or institutional controls as required by the FOST. Article 31 will provide that, in areas where the deed restrictions apply, they will become a condition of a permit or improvement plan. For example, compliance with the deed restriction for LBP will become a condition of an occupancy permit issued by DBI. This is a very significant enforcement tool and will allow DPH to inspect and ensure that the conditions have been met prior to occupancy.

c. Requirements that apply generally.

Article 31 will also impose general implementing provisions. Among other things, this category includes: requirements for reimbursement of DPH administrative costs; authorization for DPH to adopt implementing regulations and take other actions consistent with the legislation; and creation of an enforcement scheme, including penalties, for violations. These provisions mirror similar provisions in Article 22A and other local laws.

d. Regulations.

Article 31 will also authorize the DPH Director and Health Commission to add and implement certain requirements by regulation. For example, Article 31 will allow additional geographic areas to be subjected to Article 31 by regulation as long as the same underlying conditions and restrictions apply to those new areas. For example, if an

additional geographic area is transferred to the SFRA and that area has the same conditions and requirements as those that apply to Parcel A, that area can be added by regulation without having to seek an amendment by the City's Board of Supervisors. This will accommodate potential smaller piecemeal transfers of land to the SFRA in an efficient manner. Areas that have more stringent requirements than Parcel A cannot be added by regulation.

Article 31 will authorize the DPH Director to adopt, by regulation, two maps. The first is a map of the historic shoreline of the HPS. The second map will show Navy subsurface utilities. These maps will be used for Tier I/Tier II classification purposes. In addition to the specific items discussed above, the regulations will provide the screening levels; very specific details on minimum standards for various plans and reports; qualifications for people who prepare such plans and reports; and certification requirements.

D. Summary.

A new ordinance, codified as Article 31 of the Health Code, would make compliance with deed restrictions, certain FEIR Mitigation Measures, and other City laws mandatory and enforceable. Article 31 will establish enforcement mechanisms, including withholding or denial of a permit or improvement plan approval, an order to stop work, penalties for permit violations and monetary administrative and civil penalties. Article 31 and its companion ordinances are subject to approval by the following public bodies: City's Board of Supervisors, the SFRA, the Building Inspections Commission and the Health Commission. A person must comply with Article 31 in order to obtain a City building, grading, other permit or improvement plan approval that involves soil disturbance. Article 31 sets forth very detailed steps to allow the City regulators to closely monitor development on Parcel A and confirm that conditions remain safe. Article 31 will also authorize the City to impose protective measures, such as periodic gas monitoring, in areas within 1,000 feet of old disposal sites, where construction could pose a threat to health and safety. These protective measures will become a condition of a permit or improvement plan enforceable by the City. Article 31 will also address and require planning and contingencies for newly discovered contamination, if any, and ensure that new information is collected and added to the database.

As described, through the multiple enforcement mechanisms in the Phase I DDA and Article 31, the SFRA and the City can enforce the various applicable requirements and Mitigation Measures by mandating reporting, protocols, and plans. In this manner, the SFRA and the City can ensure that subsequent owners and developers monitor and maintain the condition of Parcel A and that it remains safe for unrestricted residential reuse.

V. ENVIRONMENTAL INSURANCE.

In addition to the standard general liability and contractors' insurance, the SFRA has secured environmental insurance policies covering Parcel A. This section discusses the details of the insurance policies.

Although the Navy retains legal responsibility for claims concerning environmental contamination discovered on HPS even after it has been transferred as result of the statutory indemnification and covenants described above, if a previously unknown environmental condition were discovered by the SFRA or future owners, it

might take the Navy many months to respond to the problem. Therefore, to ensure that the SFRA has the resources to respond to an unexpected environmental problem quickly and to protect against potential gaps in the Navy's legal liability, the SFRA and Lennar/BVHP plan to obtain a package of pollution legal liability insurance for each parcel at the same time that the SFRA accepts title to the parcel. This type of insurance is becoming the standard in base closures around the country. The specific requirements for how this environmental insurance program will be administered by the SFRA and Lennar/BVHP are set forth in the Phase I DDA.

For Parcel A, Lennar/BVHP will purchase for its and the SFRA's and City's benefit a \$25 million pollution legal liability policy for a ten year term. AIG Environmental will be providing the insurance policies. AIG is backed by an A++ rated company with approximately \$400 billion in assets. The named insureds will be SFRA, the City and County of San Francisco and Lennar/BVHP. The policy will be effective as of the date that the SFRA acquires title to Parcel A and the named insureds will remain insured from that date throughout the ten-year life of the policy regardless of subsequent changes in ownership of portions of the Parcel.

The policy will cover costs associated with (i) remediation of previously unknown environmental contamination above actionable levels that is discovered following transfer to the SFRA; (ii) third party claims, including "toxic tort" claims, against the SFRA and/or its agents; and (iii) remediation costs arising from regulatory changes that necessitate additional cleanup on parcels that have already been conveyed by the Navy. Specifically, the policy will cover claims such as: a third party lawsuit alleging bodily injury or property damage caused by contamination; a claim that waste was sent to an off-site disposal site which has become a Superfund site and requires remediation; and clean-up costs arising from new and pre-existing contamination (including low-level radioactive waste). The environmental insurance package will help address unanticipated conditions, delays and other contingencies. AIG conducted its own due diligence and determined that it was appropriate to offer coverage for the parcel understanding that it would be used for unrestricted residential reuse.

VI. OTHER ENVIRONMENTAL LAWS.

Additional environmental laws generally applicable to construction and development activities will apply to Lennar/BVHP and other developers and owners (including homeowners where applicable) doing work on Parcel A. Some of these requirements are referenced and incorporated into the documents discussed above, such as the FEIR Mitigation Measures; Article 31; and the Phase I DDA, in which case the SFRA and/or City may have additional enforcement authorities. Otherwise, these laws apply and are enforced just as they would be at any other project. This section provides a summary of generally applicable laws not discussed in detail above and explains how they will apply to Parcel A.

A. Storm Water Quality.

Parcel A development activities will require a Construction General Permit under California's Storm Water Program. Construction activities subject to this permit include clearing, grading, and disturbances to the ground such as excavation and stockpiling. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). This document emphasizes the use of appropriately selected, correctly installed and maintained pollution reduction Best

Management Practices (BMPs). SWPPPs are available to the public under Section 308(b) of the federal Clean Water Act and will be made available by the RWQCB, upon request.

The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of storm water discharges and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in storm water as well as nonstorm water discharges. The SWPPP will contain a site map that shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project.

The SWPPP for Parcel A development activities will list BMPs that will be used to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP will include a visual monitoring program and a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs.

The SWPPP addressing Parcel A development activities will include BMPs which address source control and, if necessary, pollutant control. Required elements of a SWPPP include: (1) site description addressing the elements and characteristics specific to the site; (2) descriptions of BMPs for erosion and sediment controls; (3) BMPs for construction waste handling and disposal; (4) implementation of approved local plans; (5) proposed post-construction controls, including description of local post-construction erosion and sediment control requirements; and (6) non-storm water management.

EIR Mitigation Measures 7.F and 9.B address storm water discharges and identify a number of specific requirements for both the SWPPP and BMPs. The SWPPP can also satisfy the storm water and erosion control plan requirement in Article 31.

B. Dust Control.

Construction on Parcel A will trigger a variety of dust-related regulatory requirements. Phase I activities on Parcel A must meet the guidelines for controlling particulate emissions in Bay Area Air Quality Management District (BAAQMD) Regulation 6. The requirements of this regulation are detailed in the FEIR Mitigation Measures matrix included as Attachment L. Construction and grading activities on Parcel A may also trigger the requirements of 17 CCR 93105, Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining. The ATCM requires, among other things, employment of the best available dust mitigation measures in areas where naturally-occurring asbestos is likely to be found. Asbestos occurs naturally in the bedrock underlying Parcel A in the form of the mineral serpentine. As a result, the native soils in Parcel A may contain small amounts of asbestos. Pursuant to the ATCM, a dust mitigation plan would be prepared and submitted to BAAQMD for review and approval. This plan would specify how the operation will minimize emissions and must address specific sources of dust emissions. Regardless of the size of the disturbance, activities must not result in dust emissions that are visible crossing the property line. Fugitive dust emissions from demolition activities are also subject to BAAQMD Regulation 11, Rule 2 (Section 11-2). Section 11-2 prohibits the creation of any visible plumes of dust during the demolition of buildings that contain ACMs.

Parcel A development activities must also satisfy the requirements of DPW Order No. 171,378. This City order establishes "good housekeeping practices" that must be followed in an effort to achieve the goal of no visible dust emissions.

Several FEIR Mitigation Measures (2.B [PM10], 8.A [asbestos]), deed restrictions and Article 31 also require dust control. Lennar/BVHP will prepare a comprehensive Dust Control Plan for Phase I Parcel A development activities that can serve to satisfy these various requirements. The plan will address a variety of potential dust generating activities, including site grading, excavation, and back-filling activities, demolition work, soil stockpiling, loading and unloading, materials transport, wind erosion, road construction and maintenance, and allowable vehicle speed.

C. California Occupational Safety and Health Act (Cal/OSHA).

The construction and grading activities on Parcel A will trigger Cal/OSHA regulatory requirements with respect to protection of construction workers. This will require a health and safety plan to be prepared to satisfy the requirements set forth in the California Code of Regulations, Title 8, Section 5192. The plan will facilitate coordination and communication of safety and health issues among personnel responsible for the various activities which will take place at the site. The program will provide the means for identifying and controlling worksite hazards and the means for monitoring program effectiveness. It will provide the overall means for planning and implementing the needed safety and health training and job orientation of employees, who will be working at the site.

The health and safety plan for Parcel A must meet the Cal/OSHA guidelines and include the following: (1) policy statements of the line of authority and accountability for implementing the program, the objectives of the program, and the role of the site safety and health supervisor or manager and staff; (2) means or methods for the development of procedures for identifying and controlling workplace hazards at the site; (3) means or methods for the development and communication to employees of the various plans, work rules, standard operating procedures and practices that pertain to individual employees and supervisors; (4) means for the training of supervisors and employees to develop the needed skills and knowledge to perform their work in a safe and healthful manner; (5) means to anticipate and prepare for emergency situations; and (6) means for obtaining information feedback to aid in evaluating the program and for improving the effectiveness of the program.

The health and safety plan will also include the following: summary analysis of hazards on the site and a risk analysis of those hazards; site map or sketch; site work zones (clean zone, transition or decontamination zone, work or hot zone); use of the buddy system; site communications; command post or command center; standard operating procedures and safe work practices; medical assistance and triage area; hazard monitoring plan (air contaminant monitoring, etc.); decontamination procedures and area; and other relevant matters.

In addition, the health and safety plan serves to satisfy the health and safety plan requirement in Article 31. It will also address the worker safety components of Mitigation Measure 7.D by specifying the training requirements for workers (including Hazardous Waste Operations and Emergency Response or "HAZWOPER" training where appropriate) and Mitigation Measure 7.E by discussing emergency procedures in the Contingency Plan.

D. Biological/Resources Management.

The FEIR found no sensitive species were known to inhabit the HPS although avian species may occasionally forage on the Shipyard. Federal requirements in the

Migratory Bird Treaty Act (16 U.S.C. Section 703) protect nesting birds and development activities would be subject to these requirements. To assure compliance with these requirements, the developer must have a qualified biologist conduct a field survey for active nests prior to construction work that is planned between approximately February 16 to July 13 (typical bird nesting season). If any active nests are identified from the field survey, a biological monitor would be present during tree and vegetation removal to ensure that all necessary protection measures are followed. As discussed above, implementation of storm water BMPs under FEIR Mitigation Measure 9.B would control runoff from Parcel A that otherwise could affect any existing small wetland areas on the shoreline of the Shipyard.

VII. SPECIAL ISSUES OF INTEREST.

This section discusses several specific issues that have been raised by the community, the regulators, the SFRA, the City, Lennar/BVHP and other interested parties regarding potential residual contamination, unknown or changed conditions and adverse conditions created by cleanup, construction or development activities.

A. Landfill Gases, Including Methane.

There is a known former solid waste disposal landfill on Parcel E, which is in close proximity to the western portion of Parcel A. As with many old landfills, the Parcel E landfill is generating landfill gases. Methane and carbon dioxide are the two main components of landfill gas. Methane is non-toxic but it can create a potential explosion hazard if it collects inside of a structure. The Navy, the regulators and Treadwell & Rollo, the SFRA's independent environmental consultant, have investigated the possibility that landfill gas might migrate from Parcel E to Parcel A and become captured in new structures on Parcel A, including new underground utilities, and create a risk for future workers, residents or visitors, including the risk of an explosion. As a result of the actions taken and the studies completed by the Navy, City staff and the SFRA's independent consultant agree with the regulators that this risk has been properly addressed and do not believe that the landfill gases poses a hazard to residential development on Parcel A.

Under the oversight of the regulators, with the additional input and oversight of the CIWMB, the Navy has investigated the Parcel E landfill in detail for the past two and a half years. In 2002, the Navy installed, on the north side of the landfill, and between the landfill and Parcel A, a gas control system which includes a subsurface gas cutoff wall, passive and active landfill gas extraction wells and three tiers of gas monitoring probes (GMPs). The figure included as Attachment N shows the locations of the gas control system and the three tiers of gas monitoring probes.

The three tiers of GMPs primarily monitor whether the gas is migrating beyond the boundaries of the landfill and onto the immediately adjacent University of California San Francisco (UCSF) property south of Crisp Avenue. If gas is detected above the trigger levels in the GMPs, the Navy promptly activates its extraction system to remove the gas from the subsurface. The Navy has a detailed Landfill Gas Monitoring and Control Plan in place, which includes steps for notifying the relevant regulators and extracting the gas from the UCSF property. In addition, as the cleanup of the Parcel E landfill continues, the Navy will select a final remedy for the landfill and for monitoring and controlling the landfill gas. All of the Navy decisions on the Parcel E landfill will undergo regulator review and approval and provide opportunities for public input.

There are 13 GMPs located on Crisp Avenue at an average of 125 feet apart. These Crisp Avenue GMPs are monitored for methane and demonstrate whether methane has migrated into the subsurface under Crisp Avenue. To date, there has been no detection of methane in the Crisp Avenue probes. Specifically, in June 2002 the Navy started testing the GMPs on Crisp Avenue prior to the construction of the landfill gas control system. The Navy continued to test the Crisp Avenue probes during and after construction of the landfill gas control system and never detected any landfill gases in those probes. The GMPs installed in Crisp Ave in 2002 (GMPs 13 -19) have been monitored at least 60 times and no methane has been detected at any time. The other six GMPs installed in February 2004 (GMPs 27-32) have been monitored eight times and no methane has been detected.

The Navy will continue to test the Crisp Avenue probes for the presence of landfill gas. The Navy is currently monitoring the Crisp Avenue GMPs on a monthly basis for landfill gas through the use of field instruments. The Navy must report any detection of methane to the regulators, including the CIWMB and LEA.

In reviewing and concurring with the FOST, the regulators have reviewed the information on this issue and have concluded that Parcel A is suitable for transfer and its intended reuse. The SFRA's independent consultant, Treadwell & Rollo, concurs that methane has not migrated to Parcel A and is unlikely to migrate to Parcel A in the future. See Attachment H.

Although landfill gas is not expected to migrate to Parcel A, the risk that methane or other landfill gases could migrate to Parcel A in the future is addressed by Article 31. Prior to any new construction on Parcel A, Article 31 will require all contractors and developers who apply for permits to review all landfill gas data and submit a report on whether landfill gas has migrated to Parcel A. If the DPH Director, with assistance from the CIWMB and the LEA, determines that methane could pose a risk to human health and safety, he or she will impose appropriate requirements. The details of Article 31 are described above in Section IV(C).

Given these circumstances, the SFRA's consultants and City staff have concluded that potential migration of landfill gas, including methane, onto Parcel A does not pose a risk to the health and safety of future owners, residents or visitors to Parcel A and that there are protections and protocols in place to determine whether conditions change and if so, for addressing new conditions.

B. Volatile Organic Compounds.

Very low levels of volatile organic compounds (VOCs) have been detected in the subsurface on Parcel E under Crisp Avenue. If concentrations of VOCs should increase substantially and migrate onto Parcel A, then they could cause a risk to future residents and workers on Parcel A. Although VOCs are commonly found in low concentrations in landfill gases, the VOCs detected under Crisp Avenue are not likely associated with the landfill gas on Parcel E, because there has been no detection of methane in the Crisp Avenue GMPs. Crisp Avenue contains many utility lines, including sewers and storm drains. Sewers, in particular, contain low levels of VOCs. In addition, the asphalt on Crisp Avenue and soil under Crisp Avenue could contain trace amounts of petroleum hydrocarbons and other chemicals that could be emitting these low levels of VOCs.

As part of its ongoing monitoring for methane, the Navy has committed in the FOST to conduct annual sampling and analysis for the individual volatile components. As an added precaution, the Navy will also analyze, on an annual basis, groundwater

samples from one well on Crisp Avenue. These efforts will provide more data on the nature and extent of the low levels of VOCs present in the subsurface of Crisp Avenue. The Navy will report the data to the regulators, CIWMB and DPH, including the LEA.

The Navy, the regulators, including the CIWMB and SFRA's independent consultant, Treadwell & Rollo, have investigated these potential concerns and agree that VOC levels that were detected on Crisp Avenue are well below any level that would cause a risk to future residents or workers on Parcel A or in the areas adjacent to Crisp Avenue. See Attachment H.

As with methane, the City's Article 31 ordinance will provide an additional layer of protection. See above discussion in Section IV(C).

Based on the above, the migration of VOCs onto Parcel A does not pose a risk to the health and safety of future owners, residents or visitors to Parcel A and that there are protections and protocols in place to determine whether conditions change, and if so, for addressing new conditions.

C. Abrasive Blast Material and Utility Corridors.

ABM, also referred to as sandblast grit, was historically used at HPS to prepare ship hulls for repainting and other repairs. Wet sandblasting is also specifically mentioned as a method used for decontamination of irradiated ships involved in Operation Crossroads in the late 1940s and early 1950s, as documented in the HRA.

The ABM used to sandblast a ship is generally a non-cohesive, granular material and typically may have a characteristic green or black color. Granulated ABM made by all manufacturers is chemically inert; therefore, it does not have hazardous waste characteristics of flammability, corrosivity, or reactivity. Historically, silica sands were commonly used as ABM. Other common ABMs used at Naval facilities included Green Diamond®, a ferro-nickel slag produced as a byproduct of nickel production from lateritic ore, and Black Beauty®, a coal slag abrasive.

Historically, after a sandblasting operation, there was a large quantity of used ABM. This used material was sometimes stockpiled and then reused. Anecdotal evidence suggests that ABM was sometimes used at HPS as bedding, aggregate, or backfill material (e.g., for pipelines, former fill areas, roadways, and driveways). Typically, the Navy did not keep records documenting the placement locations, so the exact locations and quantities of ABM are not known. However, ABM has been encountered during site characterization and remediation activities.

As indicated by the activities described above, two types of contamination issues arise from reuse of spent ABM. First, ABM can contain elevated levels of metals from the paint on ships, particularly lead, chromium, copper, nickel, and zinc. Second, the coal slag that is used to manufacture ABM sometimes contains low levels of naturally-occurring radionuclides (radium and its daughter products), which may be concentrated during the ABM manufacturing process, resulting in ABM with elevated radiation levels.

Fortunately, ABM is readily distinguishable from natural soils or other backfill used at HPS. ABM materials have specific physical characteristics such as grain size, uniformity of material, and color. These characteristics allow visual observations to be used to determine when the ABM is encountered in the subsurface. Limited quantities of buried ABM have been discovered in two places on Parcel A as reported in the ROD and FOST.

In 1993 as part of the Site Inspection program at Parcel A, two landscaped medians containing electrical utility lines in the parking lot of Building 901 were investigated. This area is known as site SI-19. The Navy used an "investigation by excavation technique" to remove sandblast grit and oily waste from the medians. All contaminants of concern were removed as part of the investigation and no further investigation was required in the Parcel A ROD. In 1992, as part of a basewide radiation survey, the SI-19 area was scanned for gross gamma radiation; no elevated levels were detected. The SI-19 area was rescanned for radiation in 2002 with the USEPA scanner van and again no elevated readings were found.

In 1995, during the Parcel A Remedial Investigation, a material described as Black Beauty® was excavated from IR Site-59 Jerrold Avenue Investigation. It appears the material may have been used as backfill material around an old sewer line repair. As discussed above, the Navy excavated the material until confirmation samples collected from the excavation area contained minimal concentrations of any constituents of concern. No further investigation was required in the Parcel A ROD. This area was scanned for radiation in 2002 with the USEPA scanner van and no elevated readings were found.

Despite these two discoveries, there is no evidence that backfilling with spent ABM was a routine practice at HPS. The regulatory agencies required no further investigation of this issue. Though there is no reason to suspect a significant amount of ABM at Parcel A, there is a possibility that it, like other unknowns, might be found. As discussed above, under federal law, the Navy has provided the CERCLA Covenant that any additional remedial action found to be necessary after the date of transfer shall be conducted by the United States.

Because it specifically requires protocols for unknowns, such as ABM, Article 31 will provide an added level of protection. Under Article 31, when working in former utility areas, contractors must look for ABM and handle it in a specified manner if it is found. In areas other than utility corridors, ABM will be treated like other unknowns under a contingency plan. Section IV(C) details the procedures under Article 31. Thus, if ABM is disturbed during construction activities, it will be properly identified and handled.

The only other utility issue on Parcel A is the possible presence of asbestos wrapped steam pipes. If encountered, the asbestos will need to be properly handled as described in Section II(B)(3)(c) and Attachment L.

D. Off-Parcel Issues.

As discussed above in Section II(B)(2)(e), the Navy's regulators', City's and SFRA's environmental due diligence has addressed the potential for contaminants to migrate onto Parcel A from adjacent parcels. The three ways that contaminants might migrate are: 1) as subsurface gases; 2) in groundwater; and 3) as dust emissions during remediation of adjacent parcels. Subsurface gases are discussed in Sections VII(A) and (B) above. This section discusses groundwater and dust emissions.

Groundwater. The Navy concluded in the FOST and the SFRA's independent consultant, Treadwell & Rollo agreed that no investigation, remediation or monitoring of groundwater underlying Parcel A is required. Therefore, only future migration from off parcel areas is a concern, and only if there are potential exposures to contaminated

groundwater. The groundwater flow direction is generally away from Parcel A towards the Bay, so it is not likely that contamination will flow onto Parcel A in the future. Further, in San Francisco, groundwater is not used as drinking water. The Navy will also continue to monitor the groundwater on the adjacent parcels and is required to notify the regulators and the City if conditions should change. Based on these factors, Treadwell & Rollo, SFRA's environmental consultant, concluded that groundwater contamination present in adjacent parcels does not pose a threat to future residents of Parcel A. See Attachment H.

Dust. When the Navy undertakes remediation of contaminated soil at the HPS, it must comply with state law, including BAAQMD requirements, and monitor and control dust so as to not create a hazard to its workers, tenants in adjacent areas and residents in the surrounding neighborhood. This will continue to be the case once Parcel A is transferred and developed. Currently, the Navy must prepare work plans for all removal and remedial actions. The Navy includes contingency and community notification as part of these plans. In addition, these plans are approved by the regulators and the other agencies have authority to monitor and inspect these activities and require the Navy to abide by its plans when conducting its work. The Navy must also prepare health and safety plans for protection of workers during remediation activities pursuant to OSHA standards and must include provisions for controlling visible dust. In addition, the BAAQMD has authority to inspect an area, if it receives a complaint from surrounding communities of excessive dust from any construction activity.

Based on the above, migration of contaminants onto Parcel A as subsurface gases, in groundwater or as dust emissions have been or will be properly addressed. In the future, a combination of local, state and federal agencies will continue to monitor these conditions and verify that they are not a problem or take action if conditions change.

E. Naturally-Occurring Metals.

Concerns have been raised regarding naturally occurring metals in soils on Parcel A. Much of the land that the City and County of San Francisco occupies, including part of the HPS, and in particular the Parcel A hill, contains serpentinite, chert and basalt bedrock typical of the Franciscan Complex. The Franciscan Complex is the predominant bedrock unit in the California Coast Ranges. Elevated levels of arsenic, iron, manganese and nickel are naturally found in these rock formations, and therefore found in soil in any area of the City that overlays these rock formations. Since there are no known man-made sources of these metals on Parcel A, the Navy and regulators have concluded that the few slightly elevated detections of these metals that the Navy found and any similar levels found in the future are most likely due to these natural rock sources. Because of the ubiquitous or ambient nature of these metals and their various concentrations, based on standard risk evaluation models, the Navy and regulators concluded that, even these slightly-elevated levels do not pose a risk. The City agrees with the Navy and regulators' conclusions and have determined that, as to naturally-occurring metals, Parcel A of the HPS is geologically similar to other areas of the City, has the same characteristics, and poses no greater health or environmental risk as those other similar areas of the City.

F. Dust.

In addition to dust-generating activities by the Navy on other parcels (discussed above in Section VII(D)), concerns have been raised about the generation of dust during new grading, excavation and construction activities on Parcel A.

There are several overlapping mechanisms in place to prevent uncontrolled dust from becoming a problem. All activities on Parcel A must comply with all existing requirements, laws and standards pertaining to dust. Various regulatory agencies, including BAAQMD and DPH will enforce existing requirements. The SFRA will also enforce the FEIR Mitigation Measures pertaining to dust under the Phase I DDA. As a final layer of protection, Article 31 will require a dust control plan and a worker health and safety plan. The regulations set forth the minimum requirements for these plans and are enforceable by DPH and DBI. Based on the above, the necessary rules and enforcement mechanisms are in place to ensure control of dust from development activities on Parcel A.

G. Lead-Based Paint.

Concerns about LBP in soil are addressed in Section II(B)(3)(b) above. The requirements applicable to LBP can be found in the deed restrictions, FEIR Mitigation Measures, the Phase I DDA, Article 31 and Attachment I. Based on existing data, the deed restriction imposing obligations on any subsequent owners, the ability for the City to enforce these obligations as a pre-condition to obtaining an occupancy permit; and other methods of enforcement, adequate mechanisms are in place to ensure compliance with law and protection of health and safety.

H. Natural Disasters.

A concern has been raised that in the event of a natural disaster, like fire or earthquake, conditions on parcels adjacent to Parcel A could change, thus impacting the residents, workers and visitors on Parcel A. Scenarios have been posed that a very strong earthquake could damage the Parcel E landfill gas control system and create new subsurface pathways for methane migration; a grass fire could burn and destroy the above ground portion of the landfill gas system; or that smoke generated from a fire might contain toxic materials.

In August 2000, a fire occurred on the Parcel E landfill. After the initial 14-acre surface fire was extinguished by firefighters, hot spots continued to smolder at depths less than one foot beneath the ground surface over an area of approximately 5 acres. These hot spots were extinguished within one month. In November 2000, the Agency for Toxic Substances and Disease Registry (ATSDR) conducted a Health Consultation about the effects of the fire. ATSDR produced a report entitled "Health Consultation Parcel E Landfill Fire at Hunters Point Shipyard" dated March 2, 2001. The report concluded that components from the initial fire could have caused reversible, short-term adverse health effects and air sampling data collected during the smoldering did not indicate a release of chemical or physical components likely to result in adverse health effects. ATSDR's January 2001 Health Consultation Summary is Attachment Q.

As with the August 2000 fire, existing emergency systems will respond to fires and other natural disasters on Parcel A. Moreover, the Navy's ongoing responsibility for cleanup, monitoring and maintenance of systems, including the emergency response procedures, ensure that the consequences of any natural disaster on contamination at the HPS will be addressed under the oversight of the appropriate regulatory agencies. FEIR Mitigation Measure 7.E requires the developer to prepare a Contingency Plan (discussed in more detail in Section IV(C)(3)(a)(i)). Lennar/BVHP will also prepare an Emergency Response Plan to identify resources to respond to an emergency and ensure protection of human life, health, property and the environment. In addition, the Conveyance Agreement requires the Navy to provide or fund adequate levels of fire protection at the HPS until the bulk of the property has been remediated and transferred. These

overlapping protections imposed by the SFRA and the City under the Phase I DDA and Article 31 all ensure that any changes in environmental conditions will be quickly addressed.

VIII. CONCLUSION.

In accordance with federal and state laws governing cleanup, the Navy and regulators have determined Parcel A is safe for transfer and suitable for redevelopment for residential reuse. As part of its due diligence, the SFRA, the City and their consultants have monitored and independently evaluated the conditions on Parcel A and adjacent parcels and are satisfied, based on their consultants' conclusions and on Navy and regulator concurrence, that Parcel A can be safely redeveloped as contemplated in the Redevelopment Plan.

The SFRA has added additional safeguards in the Conveyance Agreement which are designed to ensure the appropriateness and safety of Parcel A for residential and open space uses. Additional requirements and laws will apply to Parcel A once the Navy transfers it to the SFRA. Requirements of the Phase I DDA, the FEIR Mitigation Measures and numerous other general environmental, health and safety laws applicable to construction and development will then apply to Lennar/BVHP and other owners and developers of the property. Further, new Article 31 of the Health Code will impose additional requirements and will incorporate and allow the City to enforce certain aspects of the Phase I DDA, FEIR Mitigation Measures and other environmental laws. Article 31 will also assure that the HPS is treated in a manner similar to other fill areas in the City and allows the City to closely monitor development on Parcel A and confirm that conditions remain safe for residential reuse.

Under CERCLA and Section 330 of the 1993 Defense Reauthorization Act, the Navy forever retains liability for unknown or newly discovered hazardous materials at the HPS, even after the transfer of such parcels to the SFRA. In addition to these obligations, the SFRA's and City's insurance policy for Parcel A will help address unanticipated conditions, delays and other contingencies.

In combination, these documents, agreements and laws adequately address environmental concerns on Parcel A, including concerns about potential residual contamination, unknown or changed conditions and adverse conditions created by cleanup, construction or development activities, and establish that transfer and development of Parcel A for residential reuse does not present a risk to human health or safety.

Acronyms

ATSDR	Agency for Toxic Substances and Disease Registry
ACM	Asbestos Containing Material
BAAQMD	Bay Area Air Quality Management District
BMP	Best Management Practices
CAC	HPS Citizen's Advisory Committee
CaDHS	California Department of Health Services
Cal/EPA	California Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DoD	Department of Defense
DBI	SF Department of Building Inspection
DPW	SF Department of Public Works
DPH	SF Department of Public Health
DTSC	California Department of Toxic Substances Control
EIS	Environmental Impact Statement
FEIR	Final Environmental Impact Report
FFA	Federal Facilities Agreement
FOST	Finding of Suitability to Transfer
GIS	Geographic Information System
HRA	Historic Radiological Assessment
HPS	Hunters Point Shipyard
LBP	Lead-Based Paint
NEPA	National Environmental Policy Act

NPL	National Priorities List
OSHA	Occupational Safety and Health Act
PCB	Polychlorinated Biphenyls
PRGS	Preliminary Remediation Goals
RAB	Restoration Advisory Board
RASO	Navy's Radiological Affairs Support Office
ROD	Record of Decision
RWQCB	San Francisco Bay Regional Water Quality Control Board
SFRA	San Francisco Redevelopment Agency
SVOC	Semi-Volatile Organic Compounds
SWPPP	Storm Water Pollution Prevention Plan
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

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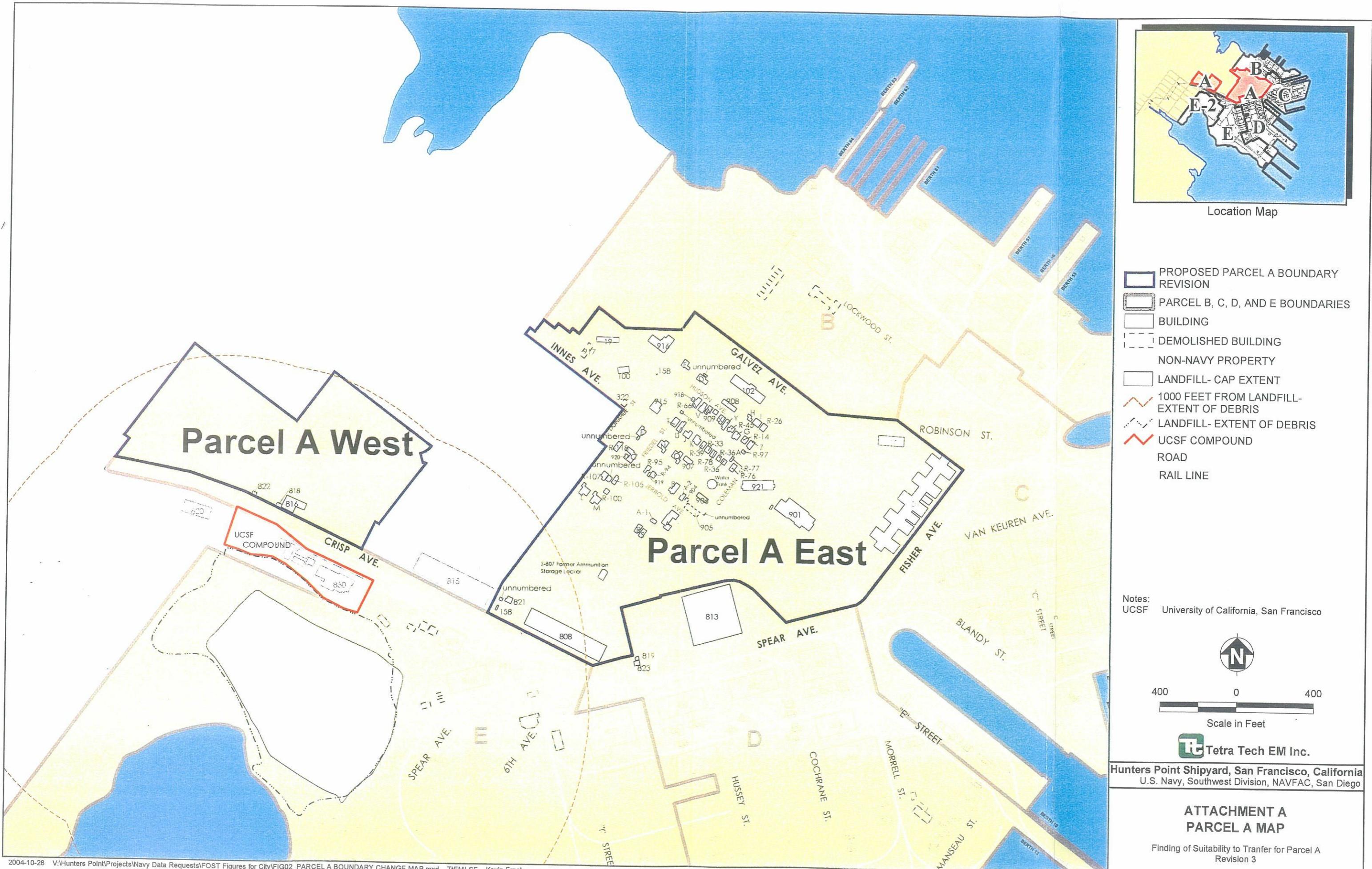
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LIST OF ATTACHMENTS

- A. Map of Parcel A
- B. Summary of Navy's Site Inspection and remedial Investigation Sites at Parcel A
- C. USEPA September 30, 2004 FOST Concurrence letter
- D. DTSC October 6, 2004 FOST Concurrence letter
- E. RWQCB October 7, 2004 FOST Concurrence letter
- F. DPH October 5, 2004 FOST Comment letter
- G. California Department of Health Services August 27, 2004 Clearance Letter for Building 322
- H. Treadwell & Rollo's July 2, 2004 Statement in Support of Transfer of Parcel A, Hunters Point Shipyard, San Francisco, CA
- I. DPH September 30, 2004 to DTSC Regarding Lead-Based Paint Issues
- J. Tom Widner's September 17, 2004 letter Regarding Radiological Issues Related to the Proposed Transfer of the "Perce A" portion of Hunters Point Shipyard, and Mr. Widner's Resume
- K. Dr. Lynn Anspaugh's October 5, 2004 letter, including Dr. Anspaugh's Qualifications
- L. Matrix Showing Implementation and Enforcement of FEIR Mitigation and Monitoring Reporting Program Applicable to Parcel A
- M. Decision Tree/flow Chart for Proposed Article 31
- N. Locations of the Gas Control System and the Three Tiers of Gas Monitoring Probes
- O. ATSDR January 21001 Health Consultation Summary



Attachment B

Summary of Site Inspection and Remedial Investigation Sites at Parcel A

Site Description	Site Number	Constituents Detected	Risk Assessment Results or Resolution of Investigation
Bldg 901 Parking Meridians	SI-19	SVOCs Pesticides PCBs Petroleum hydrocarbons Metals	Soil characterized during the investigation by excavation was replaced with clean soil. Soils remaining do not pose a threat to human health or the environment.
Bldg 816 and 818	SI-41	VOCs SVOCs Petroleum hydrocarbons Metals	Soil characterized during the investigation by excavation was replaced with clean soil. Soils remaining do not pose a threat to human health or the environment.
Former Bldg 906	SI-43	VOCs SVOCs Pesticides Herbicides PCBs Petroleum hydrocarbons Metals	Soil characterized during the investigation by excavation was replaced with clean soil. Soils remaining do not pose a threat to human health or the environment.
Steam Lines	Parcel wide (SI-45)	No contamination	No threat to human health or the environment
Storm Drains and Sanitary Sewer Systems	Parcel wide (SI-50)	Pesticides Herbicides	No threat to human health or the environment
Transformers (PCB investigation)	Parcel wide (SI-51)	No contamination	No threat to human health or the environment
Groundwater Investigation	IR-59	Motor oil	Deed Notice of motor oil in two locations at 600 ppb or less. Groundwater will not be used for drinking water.
Jerrold Ave Investigation	IR-59 JAI	Pesticides SVOCs Petroleum hydrocarbons Metals	Soils containing ABM encountered during the investigation by excavation and replaced with clean soil. Replacement soil does not pose a threat to human health or the environment.
Lead-Based Paint in Soil	Parcel wide	Lead	No threat to human health or the environment. Deed notice about lead-based paint.
Radiological investigations	Parcel wide	No contamination	No threat to human health or the environment.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
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September 30, 2004

Keith Forman
BRAC Environmental Coordinator for
Hunters Point Shipyard
1230 Columbia Street, Suite 1100
San Diego CA 92101-8571

RE: Finding of Suitability to Transfer (FOST) for Parcel A (Revision 3), Hunters Point Shipyard, San Francisco, California, September 2004

Dear Mr. Forman

The U.S. Environmental Protection Agency (EPA), Region 9, has received the above referenced FOST from the U.S. Navy. This FOST addresses the property at the Hunters Point Shipyard identified as Parcel A. This parcel, herein referred to as "the Property" is proposed for transfer to the City of San Francisco.

Pursuant to the FOST, the Navy is proposing to enter into a deed for transfer under Section 120(h)3 of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). When entering into a deed for transfer under CERCLA 120(h)3 the Navy is required to include in such deed a covenant warranting that all remedial action necessary to protect human health and the environment with respect to any hazardous substances remaining on the property has been taken before the date of the transfer, and that any additional remedial action found to be necessary after the date of transfer shall be conducted by the United States.

EPA has reviewed the FOST and without independent investigation or verification of certain information contained in the documentation, the undersigned concurs, to the extent set forth below, with the Navy's determination that all remedial action necessary to protect human health and the environment with respect to any hazardous substance remaining on the Property has been taken. The review of the documentation was completed pursuant to CERCLA Section 120(h)3 and the sole purpose of this letter is to satisfy the requirements of these provisions. The undersigned expressly reserves all rights and authorities relating to information not contained in this FOST whether such information is known as of this date or is discovered in the future.

We appreciate the opportunity to review the FOST and the Navy's cooperative efforts in

transferring 75 acres for reuse. If you have any question regarding this letter, please contact Michael Work at (415) 972-3024.

Sincerely,



Kathleen Johnson, Chief
Federal Facilities and Site Cleanup Branch

cc: Tom Lanphar
Office of Military Facilities
Department of Toxics Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2721

James Ponton
California Regional Water Quality Control Board
SF Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612



Department of Toxic Substances Control



Terry Tamminen
Agency Secretary
Cal/EPA

700 Heinz Avenue, Suite 200
Berkeley, California 94710-2721

Arnold Schwarzenegger
Governor

October 6, 2004

Mr. Keith Forman
BRAC Environmental Coordinator
Hunter's Point Shipyard
1230 Columbia Street, Suite 1100
San Diego, California 92101-8571

DEPARTMENT OF TOXIC SUBSTANCES CONTROL CONCURRENCE ON SUITABILITY TO TRANSFER PARCEL A, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

Dear Mr. Forman:

The Department of Toxic Substances Control (DTSC) concurs that Parcel A is suitable for transfer to the San Francisco Redevelopment Agency and can we accept that sufficient remedial actions have been taken to protect public health and the environment. Even though DTSC's draft Finding of Suitability to Transfer (FOST) comments relating to lead-based paint remains unresolved, DTSC is able to support the transfer of Parcel A due to the assurances made by the City and County of San Francisco that lead-based paint from structures will be managed in a way that is protective of public health. These assurances were made in a letter to DTSC dated September 30, 2004, from Dr. Rajiv Bhatia, Department of Public Health, Medical Director, Occupational and Environmental Health, City and County of San Francisco.

In our draft FOST comments, DTSC restated our long-standing position that releases of lead to soil constitute Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) releases and that CERCLA Section 120 requires the Navy, in this case, to covenant that all remedial action necessary to protect human health and the environment has been taken. DTSC also requested that the lead-based paint deed restriction specifically apply to non-residential structures and previously demolished structures where residential reuse is planned. Subsequently, DTSC requested that the deed restriction language be further clarified to require soil sampling take place after demolition and removal of debris but prior to any construction, including grading.

Mr. Keith Forman
October 6, 2004
Page 2

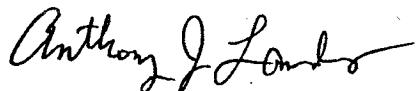
The last two changes to the draft FOST were requested so the deed restriction would provide clear and concise direction to the grantee as to actions necessary to protect public health. In its' September 30, 2004 letter, the City and County of San Francisco committed to meeting these clarifications.

The deed restriction states that the grantee shall be responsible for managing all lead-based paint and potential lead-based paint hazards; including soil lead hazards in compliance with "all applicable federal, state, and local laws and regulations." The letter from Dr. Rajiv Bhatia specifies which local laws and regulations are applicable to the release and potential release of lead-based paint to soil at Parcel A. This clarification is important because, according to the Conveyance Agreement between the Navy and the San Francisco Redevelopment Agency in order for the transfer to occur, the DTSC must assure "sufficient remedial action (including, without limitation, through the use of Environmental Restrictions, as set fourth in Section 15(c), below) has been taken to protect human health and the environment." DTSC is able to accept the lead-based paint deed restriction as sufficient remedial action necessary to protect human health and the environment, as a result of the City and County of San Francisco's administration of lead-based paint-related local laws and regulations. Further, DTSC would like to notify all parties that California Health and Safety Code, Division 20, Chapters 6.5 and 6.8 are also applicable to the release and potential release of lead-based paint to soil at Parcel A. The undersigned expressly reserves all rights and authorities relating to information not contained in the FOST whether such information is known as of this date or is discovered in the future.

We wish to thank the City and County of San Francisco and the Navy for their help in obtaining the assurances necessary to allow DTSC to concur with the Parcel A transfer.

If you have any questions regarding this letter, please contact me at (916) 255-3732.

Sincerely,



Anthony J. Landis, P.E.
Chief
Northern California Operations
Office of Military Facilities

cc: See next page.

Mr. Keith Forman
October 6, 2004
Page 3

cc: Dr. Rajiv Ghatia, M.D., M.P.H.
1390 Market Street, Suite 210
San Francisco, California 94102

Mr. Maurice Campbell
1100 Brussels Street
San Francisco, California 94134

Ms. Lea Loizos
Staff Scientist
ArcEcology
833 Market Street, Suite 1104
San Francisco, California 94103

Mr. G. Patrick Brooks.

R. _____

G. _____

Department of the Navy
Southwest Division
1220 Pacific Highway
San Diego, California 92132-5190

Mr. Michael Work
United States Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105-3901

Mr. Michael Cohen
Mayors Office of Economic Development
1 Dr. Carlton B. Goodlett Place
San Francisco, California 94102

Mr. James Ponton
Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

Ms. Amy Brownell, P.E.
Site Mitigation Engineer
San Francisco Department of Public Health
Environmental Waste Unit
1390 Market Street, Suite 210
San Francisco, California 94102



California Regional Water Quality Control Board

San Francisco Bay Region



Terry Tamminen
Secretary for
Environmental
Protection

1515 Clay Street, Suite 1400, Oakland, California 94612
Phone (510) 622-2300 • FAX (510) 622-2460
<http://www.swrcb.ca.gov/rwqcb2>

Arnold Schwarzenegger
Governor

Date: **OCT 07 2004**
File No. 2169.6032 (JDP)
PCA No. 16525

Mr. Keith Forman
BRAC Environmental Coordinator
Naval Facilities Engineering Command
Southwest Division
1230 Columbia Street, Suite 1100
San Diego, CA 92101-8517

**SUBJECT: Concurrence with September 1, 2004 Finding of Suitability to Transfer
(FOST) for Parcel A (Revision 3), Hunters Point Shipyard, San Francisco,
California**

Dear Mr. Forman:

Thank you for providing the Regional Water Quality Control Board (Water Board) with the subject FOST. The FOST documents environmental findings for the property referred to as Parcel A at Hunters Point Shipyard (HPS) (formerly Naval Station Treasure Island, Hunters Point Annex) in San Francisco, California (the Property). Parcel A consists of 76 acres of land at HPS and is proposed for transfer to the City of San Francisco.

Water Board staff has reviewed the FOST and concurs with the U.S. Navy's determination that sufficient site investigation and remedial action has been taken to protect human health and the environment for Parcel A's intended future use.

Based upon the available information, including the current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the pollutant releases at Parcel A is required.

If you have questions, please contact James D. Ponton by telephone at (510) 622-2492 or by electronic mail at jdp@rb2.swrcb.ca.gov.

Sincerely,

Bruce H. Wolfe
Executive Officer

Preserving, enhancing, and restoring the San Francisco Bay Area's waters for over 50 years

cc:

G. Patrick Brooks, Lead RPM
Naval Facilities Engineering Command
Southwest Division
1230 Columbia Street, Suite 1100
San Diego, CA 92101-8517

Michael Work (SFD 8-3)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Tom Lanphar
California Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710

Amy Brownell
City of San Francisco
Department of Public Health
1390 Market Street, Suite 210
San Francisco, CA 94102

Mr. Maurice Campbell
1100 Brussels Street
San Francisco, CA 94134



City and County of San Francisco
DEPARTMENT OF PUBLIC HEALTH

OCCUPATIONAL & ENVIRONMENTAL HEALTH

Gavin Newsom, Mayor
Mitchell H. Katz, M.D., *Director of Health*

Rajiv Bhatia, M.D., M.P.H
Director of EHS & OSH

October 5, 2004

Mr. Keith Forman
Department of the Navy
Southwest Division
1230 Columbia Street, Suite 110
San Diego, CA 92101-8571

**Draft Final Finding of Suitability to Transfer for Parcel A of the Hunters Point Shipyard
(Revision 3), dated September 1, 2004**

Dear Mr. Forman:

We appreciate the work the Navy has done over the past two years to address unresolved issues related to the Draft Final Finding of Suitability to Transfer for Parcel A of the Hunters Point Shipyard (FOST). Resolution of comments on the FOST has been critical to completing the document and advancing the Navy toward final preparations for transfer of Parcel A to the San Francisco Redevelopment Agency.

The City had indicated, in previous comments, the need for radiological clearance of Building 322 on Parcel A. Based upon information in this FOST regarding unrestricted release of Building 322 by the California Department of Health Services, the City believes this issue to be entirely resolved.

The City is aware of previous FOST comments prepared by the California Department of Toxic Substances Control (DTSC) regarding lead-based paint, and has been a party to discussions held between the Navy and DTSC, since issuance of the most-recent FOST, aimed at resolution of these comments. The City appreciates the Navy's efforts in clarifying the scope of lead-based paint requirements in the FOST and addressing DTSC's concerns. The Department of Public Health, as explained in the attached letter, has offered further details on implementation of the lead-based paint deed restriction and lead-based paint sampling requirements for future owners, developers and contractors. As detailed in the attached letter, we are confident that public health will be protected through the implementation of the lead-based paint deed restriction and existing laws and contracts.

HAZARDOUS WASTE UNIT

Phone (415) 252-3800 1390 Market Street, Suite 210, San Francisco, CA 94102 fax (415) 252-3964

We look forward to finalization of the FOST and the pending transfer of Parcel A. If you have any questions on these comments, please contact me at (415) 252-3967.

Sincerely,

Amy D. Brownell

Amy Brownell, P.E.
Site Mitigation Engineer

Cc: Michael Cohen, MOED
Elaine Warren, OCA
Rona Sandler, OCA
Matthew Shaps, Paul Hastings
Gordan Hart, Paul Hastings
Phil Burke, CH2M Hill
Patrick Brooks, Navy
Julia Vetromile, Tetrach
Tom Lanphar, DTSC
Michael Work, USEPA
Jim Ponton, RWQCB
Lea Loizos, ArcEcology

HAZARDOUS WASTE UNIT

Phone (415) 252-3800 1390 Market Street, Suite 210, San Francisco, CA 94102 fax (415) 252-3964

Memorandum

Date: August 27, 2004

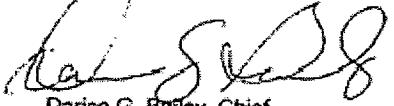
To: Mr. Rick Moss, Chief
Office of Military Facilities
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, California 95826-3200

From: Environmental Management Branch
1616 Capitol Avenue, 2nd Floor
MS 7404
P.O. Box 997413
Sacramento, CA 95899-7413
(916) 449-5664

Subject: Release of Base Realignment and Closure (BRAC) property (Building 322) at
Hunters Point Shipyard, San Francisco, California

Upon the request of The Department of Toxic Substance Control (DTSC), the Department of Health Services (DHS) reviewed documents regarding Building 322 at the Hunters Point Shipyard. This documentation indicated that the buildings met the Federal radiological release criteria. Therefore, the BRAC property is acceptable for unrestricted release.

If you need further assistance please contact me at (916) 449-5664.



Darice G. Bailey, Chief
Waste Management Section

cc: Mr. Tom Lanphar
Office of Military Facilities
Department of Toxic Substances Control (DTSC), Region 2
700 Heinz Avenue, Suite 200
Berkeley, California 94710

Mr. Keith Forman
Southwest Division
1220 Pacific Highway
San Diego, CA 92132-5190

Treadwell & Rollo

2 July 2004

Ms. Amy Brownell, PE
Site Mitigation Engineer
Department of Public Health
1390 Market Street, Suite 910
City and County of San Francisco
San Francisco, CA 94102

Subject: Statement in Support of Transfer of Parcel A
Hunters Point Shipyard
San Francisco, California

Dear Ms. Brownell,

As requested, Treadwell & Rollo, Inc. is providing the City and County of San Francisco (City) this letter to document our technical findings that support the pending transfer of Parcel A from the Navy to the City. Specifically, we were asked to provide opinions on the industrial landfill located at IR-01/21 on Parcel E and whether concerns about the landfill in relation to Parcel A have been adequately addressed. We also provide our opinion about groundwater contamination adjacent to Parcel A.

Experience

Dorinda Shipman, R.G., C.HG., Sigrida Reinis, Ph.D. and Glenn Leong, R.E.A. conducted the review of documents and contributed to formulating our opinion on the issues addressed in this letter. Their specific expertise is as follows.

Ms. Shipman, R.G., C.HG., has been a hydrogeologist in environmental consulting for 18 years. Her experience involving landfills includes litigation support; soil gas, soil, and groundwater investigation and monitoring programs; surface water and storm water monitoring programs; and risk evaluations, remedial design, and construction and closure reporting for Superfund and defense sites. Her groundwater project expertise encompasses well field development and protection, real estate property transfer, litigation support, seepage studies, and RI/FS, RAP, and CAP projects, many involving risk assessments. She has also performed or directed groundwater flow modeling for groundwater recovery and treatment system design and optimization.

Dr. Reinis has provided a variety of technical and project management services in support of clean closure of several landfills located within the Presidio of San Francisco. She has also performed decision analyses and prepared probabilistic cost estimates to identify the preferred remedial action and associated cleanup cost for a groundwater plume associated with a client-owned landfill to assess the adequacy and cost-effectiveness of insurance policies and to support negotiations with potentially responsible parties (PRPs) identified for the site. She assisted in the design for updating the landfill gas recovery system. Dr. Reinis has also assisted in the design of methane and volatile organic compound (VOC) gas recovery systems to mitigate indoor air

Ms. Amy Brownell
City and County of San Francisco
2 July 2004
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health concerns in residential and commercial structures developed over former landfills and other methane-impacted sites. Her environmental project experience also includes expert testimony for litigation support.

Mr. Leong, R.E.A., has a diverse background in environmental chemistry with extensive experience in human health and ecological risk assessment. He has assisted landowners, property developers, attorneys, insurance companies, and heavy industry with their environmental issues under the oversight of the U.S. EPA, the Department of Toxic Substances Control (DTSC), various California Regional Water Quality Control Boards, and county and city environmental health departments. His project experience includes developing a human health and ecological risk assessment for a five-parcel property located along the Stockton Channel. The property was targeted for redevelopment to include recreational and commercial/industrial land uses. In addition to assessment of risks for each parcel, remedial action objectives for soil and groundwater were developed. The risk assessment document was reviewed and approved by the DTSC. He also developed human health risk assessments for 12 sites at the Former Mare Island Naval Shipyard where the area is scheduled for future public reuse including potential residential, commercial, industrial and construction activities.

Evaluation of Parcel E Landfill Impacts

It is our opinion that landfill gases present at the industrial landfill located at IR-01/21 on Parcel E do not pose an unacceptable risk to future residents of Parcel A. To support this opinion, we have reviewed the following documents:

- *Draft First Monthly Landfill Gas Monitoring Report, Post-Removal Action, Parcel E, Industrial Landfill, Hunters Point Shipyard, San Francisco, California.* ITSI and Tetra Tech EM, Inc. March 26, 2004.
- *Draft Interim Landfill Gas Monitoring and Control Plan, Parcel E, Industrial Landfill, Hunters Point Shipyard, San Francisco, California.* ITSI and Tetra Tech EM, Inc. March 19, 2004.
- *Draft Landfill Gas Time-critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California.* Tetra Tech EM, Inc. March 19, 2004.
- *Draft Final Finding of Suitability to Transfer for Parcel A (Revision 2), Hunters Point Shipyard, San Francisco, California.* ITSI and Tetra Tech EM, Inc. March 16, 2004
- *Final Parcel E Nonstandard Data Gaps Investigation, Landfill Gas Characterization, Hunters Point Shipyard, San Francisco, California.* December 23, 2003.
- Monthly Landfill Gas Monitoring Reports.
- Handouts received at Base Closure Team (BCT) meetings.

Ms. Amy Brownell
City and County of San Francisco
2 July 2004
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It is our understanding that one of the City's concerns regarding Parcel E has been the potential risk to future residents of Parcel A posed by migrating landfill gasses, primarily methane and VOCs. Municipal landfills generally reach peak methane generation rates within 30 years of closure. The Parcel E industrial landfill ceased to operate 30 years ago, thus, methane generation has likely reached its peak and can be expected to decrease over time.

The Navy tested for methane in gas monitoring probes (GMPs) installed in Crisp Avenue starting in June 2002, prior to the construction of any landfill gas control systems or barriers. There have been no detections of methane in these GMPs or subsequent GMPs that have been installed on Crisp Avenue for the two years that these probes have been monitored. It is our opinion that these results indicate that methane has not migrated to Crisp Avenue or on to Parcel A. The Navy has also tested the GMPs on Crisp Avenue for VOCs. They have detected low levels of VOCs. Since there are no methane detections in these same GMPs, it is unlikely that the VOCs are associated with the landfill. In our opinion, the VOC levels that were detected on Crisp Avenue are well below any level that would cause a risk to future residents or workers on Parcel A or in the areas adjacent to Crisp Avenue.

The Navy's current landfill gas control systems include a subsurface gas cutoff wall, passive landfill gas extraction wells, supplemented when necessary by active gas extraction from existing extraction wells, and three tiers of GMPs. These systems are all intended to monitor and control the off-site migration of landfill gasses, and they have been demonstrated to function satisfactorily. Even if the landfill gas extraction and cutoff wall systems were to malfunction or fail due to a catastrophic event such as an earthquake, it is highly unlikely that methane migration would reach Parcel A. The Navy has stated its intent to continue operating and maintaining these systems as necessary. Operation of these systems will address the regulatory agencies' directive to the Navy to comply with applicable regulatory requirements by controlling landfill gasses sufficiently to prevent them from migrating off of the landfill boundaries. In the future, any remaining risk from landfill gasses will likely diminish when the Navy implements the final remedial plan for the Parcel E landfill.

Potential Title 27 Requirements for Structures Located on Parcel A

Although Treadwell & Rollo believes that landfill gases (primarily methane and VOCs) are highly unlikely to migrate from Parcel E through the subsurface to Parcel A, state agencies such as the DTSC or California Integrated Waste Management Board (CIWMB), and local agencies such as the Local Enforcement Agency within the San Francisco Department of Public Health (LEA), may still require future development on Parcel A to conform to certain provisions of California Code of Regulations (CCR) Title 27 or other requirements that protect human health and safety. The Navy's 1998 Parcel E Feasibility Study lists Title 27 as an applicable or relevant and appropriate requirement (ARAR) for the landfill site. Section 21190 regarding Postclosure Land Use states that the LEA shall review and approve proposed postclosure land uses if the

Ms. Amy Brownell
City and County of San Francisco
2 July 2004
Page 4 of 4

project involves structures within 1,000 feet of the disposal area, which in this case could be interpreted to include structures located on the southern portion of Parcel A. Section 21190 also lists design and construction requirements for structures within 1,000 feet of the disposal area boundary. These could include construction of a gas-impermeable liner beneath the floor slab; an active gas collection system or a passive venting system beneath the floor slab; as well as installation of automatic methane gas sensors inside the building, among others. Treadwell & Rollo's experience designing sub-slab soil gas mitigation systems for redevelopment projects in the San Francisco Bay Area indicates that the LEA may exercise considerable discretion regarding specific design requirements on a site-by-site basis, pursuant to state or local law, taking into consideration site history, monitoring data, building configuration, and other pertinent information.

Evaluation of Groundwater Impacts from Adjacent Parcels

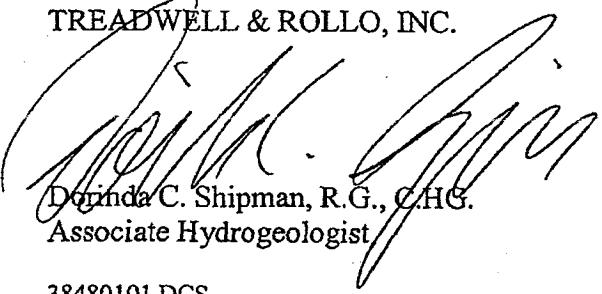
Our past reviews of groundwater investigation and monitoring efforts carried out by the Navy also lead us to believe that any contamination present in the groundwater of Parcels B, C, D, and E does not pose an unacceptable risk to future residents of Parcel A.

It should be noted that Treadwell & Rollo's assessments are based entirely on work performed by and information provided by others. Treadwell & Rollo has not performed and has not been asked to perform any independent studies or other work to verify the accuracy of such data and information. Our opinions are therefore contingent on the completeness and accuracy of data and information provided by others and could change as new information becomes available.

If you have any questions or require further information, please contact us at (415) 955-9040.

Sincerely,

TREADWELL & ROLLO, INC.


Dorinda C. Shipman, R.G., C.H.G.
Associate Hydrogeologist

38480101.DCS


Sigruda Reinis, Ph.D.
Senior Project Engineer



City and County of San Francisco
DEPARTMENT OF PUBLIC HEALTH

OCCUPATIONAL & ENVIRONMENTAL HEALTH

Gavin Newsom, Mayor
Mitchell H. Katz, M.D., Director of
Health

Rajiv Bhatia, M.D., M.P.H
Director of EHS & OSH

September 30, 2004

Mr. Anthony J. Landis
Chief Northern California Branch
Office of Military Facilities
8800 Cal Center Drive
Sacramento, CA 95826-3200

Dear Mr. Landis:

The San Francisco Department of Public Health (DPH) is pleased to provide this letter to the California Department of Toxic Substances Control (DTSC) in regard to certain lead-based paint (LBP) issues on Parcel A of the Hunters Point Shipyard (Parcel A). DTSC has raised a number of specific concerns pertaining to the scope and enforcement of LBP-requirements for Parcel A. These concerns have been stated both in written comments to the Navy's Parcel A Finding of Suitability to Transfer (FOST), as well as in discussions between DTSC, the Navy, and representatives of the City and County of San Francisco (City), including DPH.

DPH appreciates DTSC's interest in LBP issues on Parcel A. In response to DTSC's comments and concerns, DPH is furnishing this letter to provide DTSC with a summary of the generally-applicable mechanisms for assuring LBP issues are properly addressed on Parcel A, as well as specific commitments on the LBP issues detailed below. For the reasons provided, DPH is confident that LBP issues on Parcel A will be addressed in a manner that adequately protects public health.

This letter specifically addresses DTSC's comments and concerns regarding the following LBP issues:

- sampling around the water tank on Parcel A;
- timing the sampling on Parcel A to occur after demolition and removal of demolition debris but prior to mass grading activities;
- sampling soil in areas slated for residential use on Parcel A following demolition of existing structures, regardless of the past use of the structures;
- sampling on Parcel A West, where there are no longer any existing structures; and
- providing copies to DTSC of Parcel A LBP sampling plans and results and, if applicable, mitigation plans.

DPH has attached a summary of procedures that will apply to all LBP and potential lead in soils issues following transfer of Parcel A. The summary document outlines three mechanisms that the City currently has in place for requiring owners, developers, and contractors to properly address LBP issues: (1) current City laws; (2) Final Environmental Impact Report (FEIR) mitigation measures; and (3) the Phase I Disposition and Development Agreement (DDA). In addition to these three mechanisms, compliance with the LBP deed restriction and certain FEIR mitigation measures will be assured through a proposed City Ordinance (Article 31) as described in the attached summary.

Pursuant to proposed implementing regulations, Article 31 will give the Director of DPH the discretion to require additional sampling, and remediation if necessary, on Parcel A in association with site permit conditions, where LBP or other hazardous substances are deemed to be a potential public health issue. Each of these legal mechanisms is discussed below in this letter, and in greater detail in the attached summary document.

Generally-Applicable LBP Requirements for Parcel A

Current City laws govern a variety of LBP issues and, among other things, require containment barriers prohibiting LBP from migrating during the disturbance of painted surfaces on building exteriors, and removal of visible LBP contaminants from regulated areas prior to completing work. The City laws addressing LBP are further described in the attached summary document.

In conjunction with approval of the FEIR, the San Francisco Redevelopment Agency (SFRA) adopted findings required by the California Environmental Quality Act (CEQA), including measures to mitigate or lessen the impacts that will result from reuse of Hunters Point Shipyard. These mitigation measures are a condition of development, and include two measures specifically applicable to LBP issues. Mitigation Measure 7C requires the City, SFRA, and the owner/developer to implement and monitor compliance with institutional controls. The LBP restriction required by the FOST is one of the Parcel A institutional controls that will be implemented through this mitigation measure. Mitigation Measure 7D requires the City, SFRA and the owner/developer to perform construction activities in a manner consistent with institutional controls designed to be protective of public health. Thus, the LBP deed restriction will also be implemented through this mitigation measure. Where warranted by site-specific information, this mitigation measure calls for obtaining environmental data, and if contamination is identified in areas proposed for disturbance, preparation of a site mitigation plan. This latter requirement of Mitigation Measure 7D will also be addressed by Article 31, as further discussed below and in the attached summary.

The DDA between the SFRA and the developer Lennar/BVHP is a legally binding document detailing the development requirements and financial terms for the first phase of the infrastructure development. The DDA includes the core contract between the SFRA and Lennar/BVHP and a series of attachments that elaborate on the parties' responsibilities and obligations. Section 20 of the DDA requires Lennar/BVHP to mitigate the significant environmental impacts of development, construction and operation in accordance with certain FEIR mitigation measures, including 7C and 7D described above, and the Plan for Environmental Investigation and Remediation During Development at Hunters Point Shipyard (DDA Attachment 12). Specifically, Attachment 12 requires Lennar/BVHP to comply with mitigation measures in the FEIR, deed restrictions and, state, local and federal requirements addressing contamination, human health and safety and the environment. Section 20 also requires Lennar/BVHP to comply with all other laws and to pass on the requirements to comply with such laws in any contract or subcontract for development. Lennar/BVHP also agreed, as a closing condition to the transfer of property from the SFRA, to either work with the City to enact a new ordinance that will impose and implement these requirements or enter into a separate, specific contract with SFRA including these terms.

The proposed Article 31 applies to any applicant who will disturb more than 50 cubic yards of soil as part of their building permit, street use permit or underground storage tank permit. One aspect of this compliance will be the requirement that an applicant comply with all deed restrictions, including the LBP restriction. The intention of DPH, in conjunction with the Department of Building Inspection (DBI) or

other permit issuing agency, is to require soil sampling around existing LBP structures (after demolition but before mass grading) in areas planned for residential construction, regardless of the original use of the structures, as further discussed below in this letter. Pursuant to proposed implementing regulations, Article 31 will also give the Director of DPH the discretion to require additional sampling, and remediation if necessary, on Parcel A in association with site permit conditions, where LBP is deemed to be a potential public health issue. Thus, the Article 31 process will provide an additional mechanism for implementing and enforcing the LBP restriction (which also addressed Mitigation Measures 7C and 7D), as well as provide DPH with considerable discretion to require additional LBP investigation and remediation on Parcel A, if warranted (further addressing Mitigation Measure 7D). Several enforcement mechanisms are also established in Article 31, including withholding or denial of a permit, an order to stop work, penalties for permit violations and monetary administrative and civil penalties.

Thus, as described above and in the attached summary, DPH, through its administration of LBP-related local laws, and in conjunction with the FEIR mitigation measures applicable to LBP, the DDA requirements, and the proposed City Ordinance, will assure, as appropriate, that the SFRA, Lennar, and future property owners, developers, and contractors, comply with all applicable LBP requirements on Parcel A.

Specific LBP Issues

DTSC has raised a number of specific comments and concerns about LBP issues on Parcel A. The following discussions, and the specific commitments made by DPH, are provided to assure DTSC that appropriate steps will be taken with regard to LBP at every step in the development process for Parcel A. If any of the sampling described below results in the discovery of elevated lead levels in soil, then site mitigation plans will be prepared and implemented in the appropriate areas.

DTSC has commented that the water tank on Parcel A should be sampled. It is DPH's understanding, as well as the Navy's, that the LBP restriction requires sampling after demolition of steel structures, such as the water tank, in areas slated for residential use. Through the legal and contractual mechanisms described above and in the attached summary document, DPH will have the authority and intends to require compliance with this interpretation of the LBP deed restriction. Sampling of the soil around the water tank will be implemented through Article 31, or through other appropriate methods of implementing the requirements of the DDA.

DTSC has commented that the LBP restriction language is not explicit as to the timing of the required sampling. The restriction, as stated in the text of the FOST, requires "... soil sampling and remediation after demolition and removal of demolition debris and prior to occupancy of any newly constructed dwelling units ..." DPH will have the authority and intends to require the LBP deed restriction-mandated soil sampling after demolition and removal of demolition debris but prior to mass grading activities on Parcel A. The portions of the LBP deed restriction that require sampling after demolition will be implemented by DPH, in conjunction with DBI or other permit issuing agency, through Article 31, or through other appropriate methods of implementing the requirements of the DDA.

DTSC has commented regarding the need for LBP sampling in all areas where existing structures will be demolished prior to residential occupancy in Parcel A, regardless of the past use of the existing structures. DTSC has raised concerns that the LBP deed restriction, which refers to the joint

DoD and EPA field guide on LBP, could be interpreted as not requiring sampling following demolition of non-residential structures. DPH agrees with DTSC and will have the authority and intends to require sampling where there are existing structures, following demolition but prior to mass grading, in all proposed residential areas in Parcel A. DPH, in conjunction with DBI or other permit issuing agency, will implement this requirement through Article 31, or through other appropriate methods of implementing the requirements of the DDA.

DTSC has also raised concerns about the need for LBP sampling on Parcel A West in the area proposed for future residential construction. This area currently contains the foundations of previously-demolished structures. Based on a review of currently available data, and DTSC concerns, DPH agrees that there might be LBP issues on Parcel A West and that LBP sampling in Parcel A West is appropriate, and further agrees that the language of the LBP deed restriction does not appear to address this issue. DPH will have the authority and intends to require additional LBP sampling on Parcel A West. This sampling will be done around existing foundations, in the areas proposed for residential use, prior to removal of the foundations. Parcel A West sampling will be implemented by DPH, in conjunction with DBI or other permit issuing agency, through Article 31, or other appropriate methods of implementing the requirements of the DDA.

DTSC has also requested copies of all future LBP sampling plans, sampling results and, if applicable, mitigation plans for Parcel A. This request was made on a purely informational basis, and is in no way intended to suggest that DTSC will have approval authority with regard to such documents. DPH commits to providing these materials to DTSC, as requested.

DPH hopes this letter fully addresses DTSC's LBP-related concerns for Parcel A.

Sincerely,



Rajiv Bhatia, M.D.
Medical Director Occupational and Environmental Health

Cc: Tom Lanphar, DTSC
Amy Brownell, DPH
Michael Cohen, MOED
Elaine Warren, OCA
Rona Sandler, OCA
Matthew Shaps, Paul Hastings
Gordon Hart, Paul Hastings
Phil Burke, CH2MHill
Keith Forman, Navy
Patrick Brooks, Navy
Michael Work, USEPA
Jim Ponton, RWQCB

Attachment to DPH Letter on Parcel A Lead Based Paint Issues

Procedures for addressing Lead Based Paint and potential lead in soil issues after transfer

The City has three current mechanisms for requiring owners, contractors and developers to properly handle all lead based paint related issues on Parcel A at Hunters Point Shipyard (HPS). These three mechanisms are 1) current city laws, 2) the Final Environmental Impact Report (FEIR) mitigation measures and 3) the Phase I Disposition Development Agreement (DDA). In addition, the City has one proposed mechanism for implementation of the deed restrictions. The City plans to adopt a new section of the Health Code (Article 31) that will require compliance with deed restrictions including proper handling of all lead based paint issues.

1) City Laws

The City has three laws in place that require action related to lead based paint

- a) Building Code, Chapter 34, Section 3407 governs activities that disturb or remove painted surfaces on the exterior of buildings and steel structures. Among other things, it requires containment barriers prohibiting lead-based paint from migrating and it requires the parties to remove visible lead paint contaminants from all regulated areas before completing work. The details of this code are found at http://207.250.124.121/cgi-bin/om_isapi.dll?clientID=122574&infobase=sanfran.nfo&softpage=Browse_Frame_Pg42
- b) The Health Code, Article 11, Section 581, item 10) states that a property owner can not create a public nuisance on their property. One of the conditions that constitutes a public nuisance is any lead hazard. A lead hazard is defined as any condition that exposes children (anyone under age 21) to lead from any source, including but not limited to lead-contaminated water, lead-contaminated dust (Dust-lead hazard), lead-contaminated soil (Soil-lead hazard), and Paint-lead hazard in dwelling units or other locations. The details of the nuisance code are found at http://www.amlegal.com/sfhealth_nxt/gateway.dll?f=templates&fn=default.htm&vid=alp:sf_health
- c) The Health Code, Article 26, Section 1625 states that vacant lots containing an attractive nuisance to children and that are accessible to children; or a non-housing site at which children have been known to play or walk through can be required to take action for lead hazards. The easiest action is to keep the site inaccessible by fencing the area. However, if the site is not kept inaccessible, then the property owner can be required to allow the Health Department to sample the site for lead hazards or be required to do their own sampling. The details of this code can be found at http://www.amlegal.com/sfhealth_nxt/gateway.dll?f=templates&fn=default.htm&vid=alp:sf_health

2) EIS and EIR

As required by the National Environmental Policy Act (NEPA), the Navy prepared and published an EIS covering the Navy's disposition and reuse of HPS, including Parcel A on June 16, 2000. The Navy issued a final NEPA ROD on October 16, 2000.

On February 8, 2000, as required by the California Environmental Quality Act (CEQA), the SF Planning Department and the SFRA certified the FEIR Hunters Point Shipyard.. The FEIR analyzes the impacts of reuse of HPS based on the Redevelopment Plan following transfer by the Navy. Also on February 8, 2000, the SFRA adopted findings required by CEQA including measures to mitigate or lessen the impacts that will result from reuse of HPS. The mitigation measures are a condition of development.

There are two mitigation measures that are specifically applicable to the lead based paint issue. Mitigation Measure 7C requires that the City, SFRA or other owner/developer to implement and monitor compliance with institutional controls (ICs) designed to be protective of public health, as determined by law and in consultation with the regulatory agencies. Since the lead based paint deed restriction is one of the institutional controls it will be implemented through this mitigation measure.

Mitigation Measure 7D requires the City, SFRA or other owner/developer to perform construction activities in a manner consistent with institutional controls designed to be protective of public health, as determined in consultation with the regulatory agencies, and in accordance with CAL OSHA regulations. This mitigation measure calls for taking the following additional steps, if warranted by site-specific information:

- Obtain information on soil and groundwater contamination by sampling, reviewing existing Navy data, and/or consulting with regulatory agencies. When no sampling results are available, develop and implement a sampling program similar to that required under Article 22A of the San Francisco Public Works Code.
- If contamination is identified in the areas proposed for disturbance, prepare a site mitigation plan, similar to that required under Article 22A of the Health Code. If applicable, implement the requirements of Cal. Code Reg. Tit. 8 § 5192 (Hazardous Waste Operations and Emergency Response).
- Dispose of groundwater in accordance with applicable permits.

Since the lead based paint deed restriction is one of the institutional controls, it will be implemented through this mitigation measure. In particular, the aspects of the LBP deed restriction that require sampling after demolition will be implemented by the San Francisco Health Department. The current plan is that this sampling will be implemented through a new section of the Health Code that will be similar to the existing Article 22A.

3) Disposition Development Agreement (DDA)

On Tuesday, December 2, 2003, the SFRA unanimously approved the Disposition and Development Agreement of Phase I of the HPS (DDA) between the SFRA and the developer Lennar/BVHP. The legally binding document details the development requirements and financial terms for the first phase of the infrastructure development and includes the core contract between the SFRA and Lennar/BVHP and a series of attachments that elaborate on the parties' responsibilities and obligations.

Section 20 of the DDA requires Lennar/BVHP to mitigate the significant environmental impacts of development, construction and operation in accordance with the FEIR Mitigation Measures (as listed in DDA Attachment 11) and the Plan for Environmental Investigation and Remediation During Development at Hunters Point Shipyard (Phase I DDA Attachment 12). Section 20 also requires Lennar/BVHP to comply with all other laws and to pass on the requirements to comply with such laws in any contract or subcontract for development.

Specifically, Attachment 12 requires Lennar/BVHP to comply with:

(1) mitigation measures in the FEIR

(2) deed restrictions and

(3) state, local and federal requirements addressing contamination, human health and safety and the environment, including the City's local ordinance governing activities in areas of historic fill codified in the Building Code and Health Code Article 22A (also known as the "Maher ordinance").

Lennar/BVHP also agreed, as a closing condition to the transfer of property from the SFRA to either work with the City to enact a new ordinance that would impose and implement these requirements or enter into a separate, specific contract with the SFRA including these terms.

The full text of the DDA, including Attachment 12 can be found at
<http://www.hunterspointshipyard.com/dda.html#dda>

4) Article 31

The proposed City Ordinance, Article 31 of the Health Code has many aspects for protecting public health at the Hunters Point Shipyard after the property is transferred. Any applicant who will disturb more than 50 cubic yards of soil as part of their building permit, street use permit or underground storage tank permit will comply with Article 31. One small part of an applicant's compliance will be the requirement that it comply with all deed restrictions, which includes the deed restriction on lead based paint, and therefore the requirement that sampling occur following demolition of structures on Parcel A, in areas where new residential structures are planned. The intention of the Health Department is to require

sampling following the demolition of currently-existing LBP structures and removal of demolition debris but before mass grading in areas planned for residential construction, regardless of the original use of the structures. Sampling will also be required on Parcel A West, where there are no longer any existing structures. Pursuant to proposed implementing regulations, Article 31 will also give the Director of the Department of Public Health the discretion to require additional sampling, and remediation if necessary, on Parcel A in association with site permit conditions, where LBP or other hazardous substances are deemed to be a potential public health issue. Several enforcement mechanisms are also established in Article 31, including withholding or denial of a permit, an order to stop work, penalties for permit violations and monetary administrative and civil penalties.



September 17, 2004

Amy Brownell, P.E.
San Francisco Health Department
1390 Market Street, Suite 910
San Francisco, CA 94111

**Subject: Letter Regarding Radiological Issues Related to the Proposed Transfer of
the "Parcel A" Portion of Hunters Point Shipyard**

Dear Ms. Brownell:

I have been retained to evaluate and assess radiological issues on the Parcel A portion of Hunters Point Shipyard (HPS) and the extent to which those issues have been adequately addressed as transfer of Parcel A to the City and County of San Francisco is being considered. In this letter report, I provide a summary of my evaluation as well as a brief description of my background and areas of expertise relating to this matter, including a discussion of my knowledge of health physics, industrial hygiene, and exposure/risk assessment.

Experience

I am a board certified health physicist and a board certified industrial hygienist with more than 20 years of experience in environmental health, health physics, occupational health, exposure analysis, and risk assessment. Health physics is the profession devoted to protecting people and their environment from potential radiation hazards, while making it possible to benefit from peaceful uses of radiation and radioactive materials. In my professional employment, I have designed, conducted, and managed programs and technical studies addressing environmental and occupational impacts of radioactive materials, chemicals, metals, and mixtures of these contaminant types. I have performed radiation exposure assessments for the U.S. Nuclear Regulatory Commission, for a utility that operated a two-unit nuclear power station, and for state and federal health agencies investigating a number of major sites within the U.S. nuclear weapons complex. I have served as project manager and principal investigator on three of the nation's largest dose reconstruction projects, leading teams of scientists and engineers independently evaluating potential public health impacts from past releases of radionuclides and chemicals from U.S. nuclear weapons facilities as far back as 1943.

I have worked closely with the U.S. Centers for Disease Control and Prevention; the state health departments of Colorado, Tennessee, New Mexico, and California; and representatives of the U.S. Department of Energy and the U.S. Nuclear Regulatory Commission. With my colleagues, I have presented summaries of our dose reconstruction methods and results before many scientific and technical societies, authored a book chapter, and published peer-reviewed articles in journals such as *Health Physics*.

I am certified in the comprehensive practice of health physics by the American Board of Health Physics and in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene. My professional education, training, and background are consistent with the topics and areas of scientific study about which I will offer opinions.

Materials Reviewed in Formulating Opinions

I have reviewed and considered information from the following sources in conducting my assessment about the radiological status of HPS Parcel A and the potential for health hazards to people on Parcel A from radioactive contamination of structures or land areas within or near Parcel A:

- Draft Final Historical Radiological Assessment ("HRA"), Volume II, History of the Use of General Radioactive Materials, 1939 – 2003. Naval Sea Systems Command. February 2004.
- Electronic copies of reference documents appended to the above Draft Final HRA, as relevant to structures or land areas within or adjacent to Parcel A.
- United States Environmental Protection Agency (EPA) Radiological Scanner Van Report, Hunters Point Shipyard, March 2003.
- Discussions with Joel Cehn, C.H.P, consultant to the San Francisco Health Department prior to 2004 on radiological matters concerning HPS.
- Discussions with Navy and San Francisco Health Department personnel during a HPS site visit on March 20, 2004.
- Discussions with Navy, Navy contractor, USEPA, Cal/EPA, and San Francisco Health Department personnel, members of the Radiological Subcommittee of the Navy's Restoration Advisory Board, and members of the public at a "Historical Radiological Assessment Information Day" held on March 20, 2004 at Earl P. Mills Auditorium in San Francisco.
- Draft Final Finding of Suitability to Transfer ("FOST") for Parcel A (Revision 2), Hunters Point Shipyard, San Francisco, California. Prepared for the Department of the Navy, Southwest Division, Naval Facilities Engineering Command, by Tetra Tech EM Inc. and Innovative Technical Solutions, Inc. March 19, 2004.
- A January 25, 1985 report of a "follow-up radiation survey" of Building 815 by Radiation Detection Company.
- Historical Radiological Assessment, Hunters Point Annex, Volume I, Naval Nuclear Propulsion Program, 1966-1995. August 2000.
- HPNS Building 322 Radiation Confirmation Survey Memorandum from Steve Dean to Michael Work, USEPA. July 23, 2004
- Final Status Survey and Results, Building 322 (Donahue Street and Innes Street), Hunters Point Shipyard, San Francisco, California. July 27, 2004.
- Responses to Comments on the Hunters Point Shipyard, San Francisco California "Draft Final Historical Radiological Assessment, Volume II, Use of General Radioactive Materials, 1939-2003, February 2004", July 27, 2004

- Release of Base Realignment and Closure (BRAC) property (Building 322) at Hunters Point Shipyard, San Francisco, California, State of California, Department of Health Services, Environmental Management Branch. August 27, 2004.
- Finding of Suitability to Transfer for Parcel A (Revision 3), Hunters Point Shipyard, San Francisco, California, DRAFT FINAL. Prepared for the Department of the Navy, Southwest Division, Naval Facilities Engineering Command, by Tetra Tech EM Inc. September 1, 2004.
- "Hunters Point - City of SF request for Rad. Clean-up Guidance." E-mail communication from Ralph E. Pearce, P.E., Remedial Project Manager, U.S. Navy Hunters Point Team, regarding Parcel A sewers. September 8, 2004.

Description of HPS and Parcel A

The Navy property known as HPS consists of approximately 936 acres of land, about half of which is submerged below San Francisco Bay, plus a 3.4-acre off-base property and railroad right-of-way. HPS has been administratively divided into six parcels: A, B, C, D, E, and F. Parcel A consists of approximately 75 acres of land at HPS. Currently, 64 buildings and the foundations of 43 former structures are present on Parcel A. In addition to the 64 buildings, 45 of which are former residences, Parcel A contains storm drains, steam lines, a sanitary sewer system, and a natural gas distribution system. Parcel A is bounded by Parcels B, C, D, and E, and by the Bayview-Hunters Point neighborhood to the northwest. The boundaries of Parcel A have been revised several times since they were originally delineated in 1992. For the purposes of documenting the scope of my review for this report, Parcel A *does not* include Building 813, Building 819, Building 823, the area surrounding Buildings 819 & 823, any part of IR-18 or IR-6, or portions of Crisp Avenue and Spear Avenue that are south of "Parcel A West" and "Parcel A East." Any references in this report to the current boundaries of Parcel A are referring to the boundaries of Parcel A as shown in the Navy's Draft Final Finding of Suitability to Transfer for Parcel A (Revision 2) dated March 19, 2004.

Overview of HPS Radiological Operations

A deep water facility with two dry docks when purchased in 1939, the Navy transformed HPS to a full-service ship repair and maintenance facility with numerous support buildings, utilities, four additional dry docks, an internal railroad, and living quarters. Many structures were added to HPS during WW II, and the shipyard serviced 209 ships and constructed four ships during the war for a total of 213 "dockings." After the end of WW II, the Navy used the berthing facilities at HPS for ships returning from the Pacific. In 1946, HPS received target and support ships returning from Operation Crossroads, which included two atomic tests conducted at Bikini Atoll in the South Pacific.

The activities involving the Operation Crossroads ships resulted in the creation of a special Radiological Safety Section (RSS) and program to manage contaminated vessels. The RSS was formed by the Navy at HPS in 1946 to study the effects of atomic weapons on military personnel and assets and to develop defensive and protective measures. Over time, the RSS became known as the RADLAB, which in 1948 was formalized as the U.S. Naval Radiological Defense Laboratory (NRDL) with an expanded mission that included conduct of practical and applied research into the effects of radiation on living organisms and on natural and synthetic materials, in addition to continued decontamination experimentation. Physical and biological research undertaken by NRDL involved a variety of radionuclides from weapons test fallout and from suppliers such as the Atomic Energy Commission (AEC).

While HPS shifted from operating as a general repair facility to specializing in submarine maintenance and repair by 1951, the Navy continued to operate carrier overhaul and ship maintenance and repair facilities at HPS through the 1960s. Use of the shipyard began to decline steadily in the late 1960s and early 1970s until the yard was disestablished as an active naval facility in 1974.

Radioactive material use at HPS can be separated into the following categories:

- Refurbishment and handling of radioluminescent devices— Radioluminescent paint containing radionuclides such as radium-226 (^{226}Ra) mixed with materials such as zinc sulfide would “scintillate” or glow when the ^{226}Ra emitted radiation. This glowing allowed personnel to see controls, gauges, and walkways in darkness aboard aircraft or on docks or piers without the use of external power.
- Decontamination and study of the Operations Crossroads ships— Conducted in 1946, Operation Crossroads included explosion of two plutonium-based “Fat Man” bombs of the type used at Nagasaki to study blast effects on a fleet of 95 American and foreign ships anchored in the protected waters of Bikini Atoll in the Marshall Islands. The first test, Abel, was an air drop. Test Baker, 24 days later, used an underwater bomb that created a column of water that rose a mile into the air and fell back down on the fleet, contaminating it to an unexpected degree. Contaminants generated by the Crossroads tests included fission product radionuclides, some natural elements made radioactive by the nuclear blast, and residual unfissioned plutonium.
- Gamma radiography— Similar to the way that X-rays are used to diagnose medical conditions in people, radiation sources were used to test the integrity of welds and structural components.
- NRDL research with radionuclides— Research into the effects of radiation on living organisms, effects on materials, and methods for decontamination led to the use of a large number of radionuclides obtained from weapons test fallout and from the Atomic Energy Commission.
- Calibration of radiation detection instruments— Radiation sources of well-characterized intensity were used to calibrate the response of various types of radiation detection instruments used in NRDL research.
- Decontamination of ships other than Operation Crossroads vessels— Several vessels that were adapted by NRDL for use at atomic weapon tests after Operation Crossroads were also decontaminated at HPS. It is reported by the Navy that the USS Killen, used as a target ship in Operation Hardtrack I in the Pacific in 1958, was also returned to Hunters Point.

Uses of Radioactive Materials within Parcel A

The Navy and its contractors appear to have conducted an extensive and thorough review of historical documentation and information available from a variety of information sources, including searches of various historical archives, site assessments and reconnaissance, and personal interviews. The Navy compiled and evaluated information obtained from these sources to form the bases for identification of radionuclides of concern and designation of sites as “impacted” or “non-impacted.”

An impacted area is defined as an area that has or historically had a potential for contamination in the form of general radioactive material (that is, radioactive materials not associated with nuclear propulsion of Navy vessels) based on the site operating history or known contamination detected during previous radiation surveys. Impacted sites include sites where radioactive materials were used or stored; sites where known spills, discharges, or other instances involving radioactive materials have occurred; or sites where radioactive materials might have been disposed of or buried.

Within Parcel A, the Navy has designated Building 816 and Building 821 as impacted structures. The histories of use of radioactive materials at these facilities can be summarized as follows:

Building 816- Building 816 was a windowless, two-story concrete structure when it was completed in December 1953. The upper floor housed a 2 million-electron-volt (2 MeV) Van de Graaff accelerator and associated mechanical and electrical equipment, and the ground floor housed a chemical/biological laboratory, machine shop, and control room. A wing was added from 1956 to 1957 to house a "neutron pit". A steel addition was constructed to perform low intensity proton experiments. While sealed plutonium-beryllium (PuBe) neutron source standards were used in the building, the primary source of radioactive contamination was from tritium (³H) targets used to produce neutrons when bombarded with protons or deuterons by the accelerator. The Van de Graaff accelerator was disassembled and shipped off site around 1969, and Building 816 is currently unoccupied.

Building 821- Building 821 is a two-story concrete laboratory building that was used for the study of biological effects of radiation through exposure of animals to X radiation generated by electromagnetic means. In other words, radiation was generated by application of electrical power to a one-MeV X-ray tube that in turn emitted X-rays. In contrast to the continual emission of radiation from radionuclide sources, x-ray tubes stop emitting radiation when they are powered off. An electrical power substation is located outside of the western side of the building. The building is currently unoccupied. Even though NRDL decided in 1969 that final AEC clearance of the former X-ray facility was not needed, a subsequent investigation was conducted by New World Technology (NWT) in 2002 and all results met the release criteria.

Radiological Conditions of Facilities and Land Areas within Parcel A

Building 816

Building 816 became contaminated with tritium during operation of the Van de Graaff accelerator. After the accelerator was disassembled and shipped off site, the building was steam cleaned until no tritium contamination above background was detected. Seven radiation surveys have been conducted in Building 816 since final AEC clearance was given in late 1969. It is reported that results were within acceptable levels in each of these surveys, with radiation levels within the building and in outside areas not distinguishable from background.

- 1978- The Navy Radiological Affairs Support Office (RASO) conducted a survey that included alpha and beta scans and swipe sampling for alpha and beta-gamma activity. Soil, paint scrapings, wood scrapings, and other bulk samples were collected for radioisotopic analysis. Radioactivity levels were below minimum detectable activities.
- 1979- RASO conducted a tritium survey, finding that the building met Regulatory Guide 1.86 release limits.

- 1979- The U.S. Nuclear Regulatory Commission performed a confirmatory survey. The area met release criteria.
- 1992- PRC Environmental Management, Inc. (PRC) conducted a Phase I gamma walkover survey, noting no anomalies.
- 1993- PRC conducted a tritium study, including samples of soil and paving materials from the ground outside of the building. No result exceeded the minimum detectable activity value of 0.5 pCi/g.
- 1993- The California Department of Health Services (CDHS) performed a tritium survey. The survey confirmed PRC results, and EPA concurred with the results.
- 2001- NWT conducted a tritium survey, finding no detectable activity.

Building 816 has been released by RASO and CDHS, and no further remediation or characterization actions are planned.

I conclude that Building 816 has been successfully decontaminated, and will pose no radiological health hazard to future occupants of the HPS area.

Building 821

The Draft Final HRA states that in 1969 final AEC clearance of the former x-ray facility in Building 821 was not needed. However, an investigation was conducted by NWT in 2002 and yielded results that met modern-day release criteria. This is what would be expected, since the facility utilized an x-ray machine rather than radionuclide sources, and the x-ray machine had been removed.

Building 821 has been released by RASO and CDHS, and no further remediation or characterization actions are planned.

I conclude that Building 821 is not contaminated with radioactive material, and will pose no radiological health hazard to future occupants of the HPS area.

Building 322

Since the issuance of the Parcel A FOST in March 2004, the Navy noted new information that indicated that Building 322 on Parcel A was once located on Parcel D, where it was used by the NRDL. According to Navy records, after NRDL use of the building was discontinued and the Navy received regulatory clearance for the building under 1955 standards, the wooden structure of the building was relocated to Parcel A in 1959. Navy records indicate that no radiological operations were performed in the building while it was in Parcel A.

Because some cesium-137 (^{137}Cs) contamination had been found in one soil sample collected at the building's former location in Parcel D, the Navy conducted radiological surveys of Building 322 in its Parcel A location, the building's contents, and its concrete slab foundation in May and June 2004. The surveys included scan surveys and direct measurements of alpha, beta, and gamma radiation, exposure rate measurements, swipe samples for removable contamination, and sampling of solids for laboratory analysis for potential residual radioactive material. No contamination was found exceeding acceptable surface contamination limits from Atomic Energy Commission Regulatory

Guide 1.86, so the building and the concrete slab below it were demolished and disposed of off site. The Final Status Survey included the soil under and the area around the former Building 322 site in Parcel A. The results were consistent with or below levels of radioactivity found in similar but non-impacted background reference areas. The USEPA conducted its own independent survey of the Building 322 area and concluded "there is no radiological contamination impacting the environment".

CDHS reviewed documents regarding Building 322. An August 27, 2004 memorandum from CDHS to the California Department of Toxic Substances Control states that the documentation that was reviewed indicated that the buildings met the Federal radiological release criteria and the property was therefore acceptable for unrestricted release.

The information that I have reviewed indicates that the area where Building 322 was located on Parcel A will pose no radiological health hazard to future occupants of the HPS area.

USEPA Scanner Van

A radiological scanner van survey of HPS was performed by USEPA in September 2002. The survey covered all navigable roads on and immediately adjacent to Parcel A, with the van traveling at speeds of approximately five to seven miles per hour. When any anomalies were noted during the scanning, the van was stopped and the system was switched to pulse height analysis for extended periods of data acquisition so that specific radionuclides and relative intensities could be determined. Several areas of interest were also characterized using more sensitive hand-held instrumentation, namely a "Micro R" gamma scintillation survey meter and a portable, sodium iodide based multichannel analyzer. All anomalies detected during the scan were attributable to naturally occurring radioactivity [potassium-40 (^{40}K), ^{226}Ra , thorium-232 (^{232}Th), and uranium-238 (^{238}U)] at levels that are commonly found in the environment. A return visit with the scanner van was made in May 2003 to resurvey an area of Jerrold and Friedell Streets. An outdoor fireplace found in that area contained high levels of natural uranium and thorium in yellow firebrick, and had caused slightly elevated scanner van readings in that area.

The scanner van is a verification tool for confirming the conclusions of a comprehensive remediation program, such as the program being conducted by the Navy, and verifying that no potential contamination areas were missed. It should be noted that levels of environmental radioactivity corresponding to the Navy's cleanup standards for some radionuclides can only be measured by taking samples of the material of concern for laboratory analysis. The scanner van in many cases cannot detect radioactivity down to these low levels. However, the scanner van can detect whether there is radioactivity remaining that would cause a health hazard to future residents.

Based on the scanner van surveys, I conclude that no residual contamination from HPS operations is indicated within the surveyed areas of Parcel A.

Storm Drains

There is little evidence of sediment accumulation in Parcel A storm drains. Previous studies have attempted to sample sediments in the storm drains, but not enough sediment was available for radiological analysis. If sediment analysis were successful, it could be used as a screening tool to identify an area of surface contamination. However, direct testing is a better method for finding surface contamination and has already been done at Parcel A, using EPA's scanner van. No surface

contamination was found. Given these circumstances, I do not believe that further investigation of storm drains within Parcel A is warranted.

Sanitary Sewers

While the Navy acknowledges the poor condition of many sanitary sewers at HPS, the documents I have reviewed state that the layout of the sewer system in relationship to impacted sites within and near Parcel A is such that there is no reason to suspect that lines within Parcel A are impacted. The sanitary sewers in Parcel A drain to the Building 819 pump station. Parcel A is upland (at a higher elevation) from Building 819 and as such will receive no gravity flow from Building 819. Documents I have reviewed also indicate that if storm events cause the Building 819 pump station to be overwhelmed, flow will be directed into the Bay. The sanitary sewer lines under Crisp Street that receive flow from Buildings 816 and 821 are not included in Parcel A, and gravity flow from these buildings would also be away from Parcel A.

A recent review of sewer drawings and a site walk-down by Navy contractors confirmed that the Parcel A sections of sewer lines typically rise in elevation over 10 feet relative to the other sections of the sewer system. The Navy contractor's technical evaluation concluded that, if a blockage of the sewer system were to occur, the manhole covers would likely be hydraulically lifted out of place with approximately 10 feet of water head or less. If this were to occur, additional flow would exit the open passages and spill into the street, not back up further in elevation. This greatly limits the possibility that sewer blockages could cause sewage from other parcels to back up into parcel A.

Based on the information summarized above, I conclude that sanitary sewers within Parcel A pose no radiological health hazard to future occupants of the HPS area.

Groundwater

Groundwater on Parcel A occurs only sporadically in the fractured bedrock. Investigations have reportedly not identified any radiological contaminants of concern. Sampling was performed in at least three wells in Parcel A, and no contamination was found— only background levels of radioactivity were measured. Groundwater flow is toward San Francisco Bay, so groundwater from parcels other than Parcel A typically flows away from Parcel A. Furthermore, the groundwater in the aquifer below HPS does not meet the State of California's criteria for drinking water sources, and has not been utilized as a source of drinking water. I see no reason for further investigation of radiological qualities of the groundwater on Parcel A.

Radiological Considerations in Facilities or Areas Adjacent to Parcel A

Building 813— Building 813 is a 262-by-262-foot, four-story reinforced concrete warehouse. It was used as a general warehouse and included some offices and a supply storehouse. The building also included a Disaster Control Center, which was apparently an emergency operations center. The Disaster Control Center apparently maintained an inventory of "Radiac" radiation survey meters and check sources to provide indications that the instruments were properly functioning. Building 813 has been identified as an impacted site because of documentation that a leaking 300- μ Ci strontium-90 (^{90}Sr) check source was found in the Disaster Control Center inventory in 1973. Plans were in place at that time to remove that source and dispose of it. The building is currently unoccupied. There was

a recommendation in the Draft Final HRA that Building 813 be surveyed for potential radioactive contamination.

I conclude that, even if some contamination within Building 813 remains, it will not pose a radiological hazard to occupants of Parcel A because ⁹⁰Sr is a pure beta emitter, and beta particles emitted by any contamination will be attenuated (shielded out) by the walls of the structure. It is unlikely that the contamination from the leaking check source, if it was not fully cleaned up once identified, would have been present in sufficient quantity to be transported out of the building to a degree necessary to be a health hazard to occupants of Parcel A. The scoping survey of Building 813 should proceed to confirm the radiological condition of the structure, with remediation to follow if it is necessary to meet applicable release criteria.

Building 819 and Sanitary Sewer Lines— Building 819 is a sewage lift station containing dry and wet wells, both approximately 20 feet deep. It is constructed of reinforced concrete walls, with a flat concrete roof, no windows, and a single access door. Sewer Pump Station A remains in use, although the Navy currently has a bypass system in place due to a series of malfunctions of the system. Prior to 1974, there was high potential for release of licensed radioactive material and radium to the sanitary sewage system from shipyard and/or NRDL operations. Radionuclides of primary concern include ¹³⁷Cs and ²²⁶Ra. No previous radiological investigations have been performed of Building 819; however, the fact that suspected contamination was identified in sanitary sewer lines on Cochrane Street during Radiological Investigations indicates that Building 819 might also be contaminated. There was a recommendation in the Draft Final HRA that Building 819 be surveyed for potential radioactive contamination. A survey was also recommended for the sanitary sewer main lines along Fisher and Spear Avenues that flow into the pump station and the main line along Crisp Avenue that flows out of the pump station.

If there is contamination in Building 819, it is most likely at the bottom of the pump station wet well where particulate matter could have settled. Contaminated water will not flow by gravity from Building 819 to Parcel A, because Parcel A is at a higher elevation. And if storm events overwhelm the pump station, flow is directed to the Bay. Based on these considerations and the fact that EPA's scanner van survey found no contamination in the area, I conclude that, while radiological contamination might exist in Building 819, any contamination that exists does not pose a health hazard to occupants of Parcel A in its current configuration.

The scoping surveys of Building 819 and the sanitary sewer line along Fisher and Spear Avenues should proceed to confirm the radiological conditions therein, with remediation to follow if it is necessary to meet applicable release criteria.

Installation Restoration Site 18— IR-18 is a former fill area approximately one-third of which is located northeast of Building 916 and 25 feet below Donahue Street. IR-18 is approximately 500 feet by 500 feet in size. The site was used as a flat land area built by the Navy, a waste oil disposal area, and potentially as an area for disposal of materials used in decontamination of Operation Crossroads vessels. Radionuclides of concern include ²²⁶Ra, ¹³⁷Cs, ⁹⁰Sr, plutonium-239 (²³⁹Pu) from Operation Crossroads sandblast spoils. The site is currently undeveloped open land, and three previous radiological investigations have been performed. In 1992, PRC radon flux testing found no levels exceeding background levels. After a 1992 Phase I Surface Confirmation Radiation Survey (SCRS) noted general area gamma anomalies in sandy soils, analyses of soil samples attributed the anomalies to ²²⁶Ra and its decay products and other naturally occurring radionuclides. In 1994,

analyses of soil samples collected by USEPA showed no detectable activity above background, with detected activity attributed to naturally occurring granitic materials. The Draft Final HRA recommended that a scoping survey be conducted of areas of IR-18 that have not been remediated.

Due to the results of the three previous radiological investigations, described above, I conclude that any radiological contamination that might exist in unremediated portions of IR-18 does not pose a health hazard to occupants of Parcel A in its current configuration. The scoping surveys of the unremediated areas should proceed to confirm the radiological conditions therein, with remediation to follow if it is necessary to meet applicable release criteria.

Building 815— Building 815 is a seven-story, flat-roofed steel and concrete structure that was built in the early 1950s and served as NRDL's main research facility and headquarters from 1955 through its closure in 1969. The building included the following facilities potentially associated with radioactive material use: storage rooms; laboratories; Health Physics Division instrument repair, maintenance, and calibration facilities; Nucleonics Division laboratories and offices; Biological and Medical Sciences Division laboratories, animal quarters, and offices; and Chemical Technology Division laboratories. Two 15,000-gallon underground liquid effluent holding tanks were outside the west end of the building. A wide variety of fission product radionuclides and other radioisotopes obtained from the AEC were used in NRDL research.

A number of radiological investigations of Building 815 were conducted between 1969 and 1979. After some decontamination, the NRDL facility's 1969 disestablishment survey found that the building met the release criteria for the period. A 1970 survey by the AEC also indicated that the building met release criteria in place at that time. A 1978 survey by LFE Environmental Analysis Laboratories, Inc. noted several locations exceeding revised release limits and a 1978 RASO survey confirmed that isolated hot spots exceeded revised release criteria. Additional decontamination was performed, and a 1979 RASO resurvey of Building 815 showed that all areas surveyed met the release criteria that were applicable at that time. The Draft Final HRA indicates that contamination might remain that, with the use of modern instrumentation, would be found to exceed current, more stringent release criteria. A scoping survey is recommended.

I conclude that any radiological contamination that might remain in Building 815 likely exists at levels near the threshold of detectability using modern survey instruments, and as such does not pose a health hazard to occupants of Parcel A. The scoping surveys of the building should proceed to confirm the radiological conditions therein, with remediation to follow if it is necessary to meet modern-day release criteria.

Remediation of Adjacent Areas

If remediation is required in Building 813, 819 or 815 or any area adjacent to Parcel A, the Navy will need to follow all applicable requirements and standards to assure that the remediation activities prevent dispersal or spread of contamination to Parcel A or other areas of HPS. The Navy submits plans for all remediation activities to the USEPA and Cal/EPA for review and these agencies have authority to monitor and regulate these activities.

Other Areas Associated with HPS Activities

Several other sites, not within the current boundaries of HPS, were recently identified as having been associated with HPS activities. These include the sites of former Buildings D-19, D-20, D-21, D-22, and D-23, which were warehouse-type structures, located just outside of the current HPS property, that were used for storage by HPS. The Draft Final HRA also indicates that NRDL administrative offices moved from Buildings D-19, 20, and 21 to Building 366 (Former Building 351B) in 1952. The D series structures were demolished in the early 1950s, the area was totally renovated, streets realigned, and housing constructed.

I have not seen, nor do I know of the existence of, any information that indicates that radioactive materials were stored or used at Buildings D-19, D-20, D-21, D-22, or D-23. As such, I see no indication that radiological contamination exists that could pose a health hazard to occupants of Parcel A.

Answers to Specific Questions Assembled by the San Francisco Health Department

A set of study objectives and specific question areas was assembled by the San Francisco Health Department at the onset of this review effort. While these question areas have largely been addressed in this letter report, the study objectives and questions are presented in Appendix A, along with a brief response to each.

Please contact me if you have any comments or questions about my review or the information contained in this letter report. I can be reached at (415) 896-2400 extension 1007, or by e-mail as twidner@chemrisk.com.

Respectfully,



Thomas Widner, M.S., C.H.P., C.I.H.
Principal Health Scientist

APPENDIX A: STUDY OBJECTIVES AND SPECIFIC QUESTION AREAS

Four study objectives were delineated at the start of this review effort. They are listed below, along with a brief progress statement on each.

1. *Radiological History, Parcel A: Provide a summary of what is known about the kinds and locations of radioactive substances that were present in the past on Parcel A or the areas that contain or will contain utilities serving Parcel A ("Parcel A areas").*

Parcel A areas reviewed in this study consisted of Buildings 816 and 821, sewer and storm water lines, and groundwater. These are discussed in detail in the following section. Building 322 was also identified as a potentially impacted site. The Navy conducted radiological surveys of Building 322, the building's contents, and the underlying concrete slab foundation. No contamination was found exceeding acceptable surface contamination limits, so the building and concrete slab were demolished and disposed of off site. A Final Status Survey that included the soil under and the area around the former Building 322 yielded results that were consistent with or below levels of radioactivity found in similar but non-impacted background reference areas. The USEPA conducted its own independent survey of the Building 322 area and concluded "there is no radiological contamination impacting the environment". CDHS reviewed documents regarding Building 322 and found that the building met the Federal radiological release criteria and the property was therefore acceptable for unrestricted release.

- 1.1. *For removal actions reported by the Navy in Parcel A areas, were appropriate protocols followed in the sampling done to confirm removal?*

Bldg. 816 is the only Parcel A building identified to date that has undergone a removal of radioactive contamination. The review has shown that confirmatory sampling was appropriate and the removal complete.

- 1.2. *What kind of sampling, if any, is recommended for the City to confirm the accuracy of the prior data concerning radioactive substances removed from Parcel A areas?*

No further sampling at Bldg. 816 is necessary. Existing documentation shows that remediation was complete.

2. *Existing Conditions, Parcel A: Provide a summary of what is known about residual radioactive substances from Navy operations, that are still present on Parcel A areas.*

No residual radioactive substances have been identified at Parcel A. The report of EPA's "scan van" radiation measurements (made in September 2002) was reviewed, as was an account of follow-up monitoring performed in May 2003. All anomalies detected during the scan were attributable to naturally occurring radioactivity (^{40}K , ^{226}Ra , ^{232}Th , and ^{238}U), at levels that are commonly found in the environment.

2.1 Do known radioactive substances on Parcel A areas present a health hazard to future workers, residents or visitors to Parcel A areas in light of the intended use of Parcel A areas as set forth in the Hunters Point Redevelopment Plan?

With no residual radioactive substances detectable in Parcel A, no health hazard exists.

2.2 If known radioactive substances remain on Parcel A areas that present a health hazard, what further remedial action is recommended to alleviate those hazards?

With no residual radioactive substances detectable in Parcel A, no additional remediation is needed.

3. Data Gaps, Parcel A: Provide a summary of whether undiscovered radioactive substances may remain on Parcel A areas because of gaps in available information.

I have identified no data gaps regarding Parcel A radiological conditions. The use of radioactive materials in Parcel A was minimal, and the radiation survey data shows that residual contamination is not present at or near the surface. I am confident that Parcel A has been adequately tested.

3.1 If data gaps may remain because of undiscovered radioactive substances, can the Agency nevertheless reasonably conclude that no present hazards exist for future workers, residents or visitors to Parcel A areas?

Surface testing has shown that no present hazard exists. Any future hazard could be ruled out by subsurface testing. This has been done in areas most likely to raise suspicion: underground drain lines and groundwater. Additional testing is not warranted for several reasons. First, the use of radioactive materials on Parcel A was minimal. Second, burial of radioactive materials on Parcel A was not reported by the Navy and is not suggested by any surface features. Finally, surface and subsurface testing for radiation showed no anomalies that were not attributable to naturally occurring radioactivity.

3.2 If data gaps remain on Parcel A areas because of possible undiscovered radioactive substances, is further sampling recommended?

No data gaps have been identified.

3.3 If further sampling is recommended to address undiscovered radioactive substances, what kind of sampling should be done and when should it be done (i.e. prior to transfer or during specific types of post-transfer activities)?

I can think of no additional testing or sampling for Parcel A, at this time. Testing by EPA and the Navy has been more than adequate.

4. Adjacency: Provide a summary of available data demonstrating that adjacent areas of the Hunters Point Shipyard do or do not pose a present radiation hazard to future users of Parcel A areas, assuming the continuation of existing conditions on the adjacent areas.

Most of Parcel A is separated from Parcels B through E. Further, it is mostly uphill of areas where contamination has been found. Thus, natural processes (such as erosion) will tend to move contamination away from Parcel A. Transport of wind-borne contamination to Parcel A is theoretically possible, but absent a major disturbance of contaminated soil that is not properly managed, this can typically move only very small amounts of material—not enough to pose a hazard to occupants given the levels of environmental radioactivity reported to be present at HPS.

4.1 If gaps in data exist concerning present hazards posed by adjacent areas to future users of Parcel A areas, what sampling is recommended to fill those gaps?

It is my opinion that the sampling programs and surveys that are complete, underway, or scheduled to occur are sufficient to address potential hazards to future users of Parcel A areas due to contamination in adjacent areas.

4.2 If adjacent areas pose a present radiation hazard under existing conditions, are there adequate measures that the Navy or the City can take to protect future users of Parcel A areas from those hazards?

It is my opinion that adjacent areas do not pose a radiation hazard to users of Parcel A.

4.3 Do adjacent areas pose a potential radiation hazard to future users of Parcel A areas in the event conditions on those adjacent areas change? If so, what are the circumstances that could result in a hazard to Parcel A area users and are there adequate measures that the Navy or the City can take to protect future users of Parcel A areas from those hazards?

Conditions on adjacent areas are changing for the better. Contamination is being remediated. As long as this practice continues, adjacent areas will not pose a hazard to Parcel A occupants or users. Trucks removing waste will pass through Parcel A on the way to the Main Gate, and a truck accident here could impact the Parcel. The Navy and its remediation contractors should have adequate emergency response plans in place. I can see no improvements to Parcels B through E that would adversely affect Parcel A.

**Thomas E. Widner, M.S., C.H.P., C.I.H.
Principal Health Scientist**

Professional Profile

Mr. Thomas Widner has over 23 years of professional experience in health physics, occupational health, and human health risk assessment. He is responsible for designing, conducting, and managing programs and technical studies addressing environmental and occupational impacts of chemicals, metals, and radioactive materials. Mr. Widner manages complex human health risk assessments for projects involving potential exposures to radioactivity, hazardous chemicals, and mixtures of these contaminant types.

Mr. Widner has served as project manager and principal investigator on three of the nation's largest dose reconstruction projects, leading teams of scientists and engineers independently evaluating public health impacts from past releases of radionuclides and chemicals from U.S. nuclear weapons facilities. Teams led by Mr. Widner have advanced the state of the art for health assessment in the application of screening techniques, an iterative assessment approach, predetermined decision criteria, uncertainty analyses, simultaneous evaluation of risks from chemicals and radionuclides, and innovative public involvement. Mr. Widner has performed comprehensive assessments of releases of radionuclides and carcinogenic and noncarcinogenic chemicals and metals. He has worked closely with the Centers for Disease Control and Prevention; the state health departments of Colorado, Tennessee, and New Mexico; and representatives of the International Atomic Energy Agency, the U.S. Nuclear Regulatory Commission, and the U.S. Department of Energy. Mr. Widner and his colleagues have presented summaries of their dose reconstruction methods and results before many scientific and technical societies, and have published in peer-reviewed journals such as *Health Physics*.

Mr. Widner's project experience has included some of the most complex sites in the world. In the \$4.5 million Rocky Flats Toxicologic Review and Dose Reconstruction, over 8,000 toxic materials identified as used at the Rocky Flats Plant in Colorado since the early 1950s were evaluated, with innovative screening methods applied to focus the remainder of the study on approximately 12 materials that most likely posed off-site health hazards. At the 58,000-acre Oak Ridge Reservation in Tennessee, the variety of materials used and operations undertaken since the early 1940s likely rival or exceed that of any site in the world. At Los Alamos National Laboratory in New Mexico, top secret efforts to develop the first atomic bomb in the 1940s were followed by research and development programs in numerous fields of science and engineering.

Credentials and Professional Honors

- MS (Health Physics/Occupational Health) Purdue University (1981)
- BS (Environmental Health/Health Physics) Purdue University (1980)
- The Jeff Kizer Award from the Purdue University School of Health Sciences Faculty
- MS (National Security and Public Safety) University of New Haven (in progress)
- Certified Health Physicist, American Board of Health Physics, comprehensive practice
- Certified Industrial Hygienist, American Board of Industrial Hygiene, comprehensive practice
- U.S. Department of Energy Q-Level Security Clearance.

Representative Project Experience

Supporting Oak Ridge Associated Universities in their provision of assistance to NIOSH in evaluation of worker claims filed under the Energy Employees Occupational Illness Compensation Program Act of 2000 (EEOICPA). Documenting technical bases for reconstruction of past worker exposures at current or former U.S. government nuclear weapons plants or employers that supplied or supported the nuclear weapons complex. Also reviewing technical basis documents prepared by others.

Project director of the Los Alamos Historical Document Retrieval and Assessment Project. This five-year, \$4.4 million project for the Centers for Disease Control and Prevention involves review of the historical records at Los Alamos, in search of records that would be useful in estimating off-site releases of chemicals and radionuclides and the potential for public health effects from these releases. Relevant records are being copied and scanned, releases are being prioritized, and a database of related information is publicly available.

Project manager of the Oak Ridge Dose Reconstruction for the Tennessee Department of Health. This 6-year, \$9 million project evaluated historical exposures and health risks to off-site populations from radioiodine released during separation of radioactive lanthanum, mercury discharged from lithium enrichment operations, PCBs in the environment near Oak Ridge, and radionuclides discharged from White Oak Creek. The project also included an evaluation of the quality of historical uranium effluent monitoring, systematic searching of document repositories, and additional screening of the potential health significance of materials not evaluated in the earlier feasibility study (including arsenic, asbestos, beryllium, copper, chromium (VI), lead, lithium, Np-237, nickel, niobium, plutonium, Tc-99, tellurium, TMAB, tritium, and zirconium).

Principal investigator in the Oak Ridge Phase I Health Studies' Dose Reconstruction Feasibility Study for the Tennessee Department of Health. This 1½-year, \$900,000 study evaluated the feasibility of conducting a reconstruction of doses from past releases of radionuclides and chemicals from the Oak Ridge Reservation.

Principal investigator for historical investigations and combined radiological and chemical risk assessment activities as part of a four-year, \$4.5 million health study for the Colorado Department of Health. The Phase I Toxicologic Review and Dose Reconstruction addressed Rocky Flats nuclear weapons facility operations and emissions since 1952.

Responsible for radiological characterization of properties in the city of Pleasanton, CA that may have been impacted by effluent and sludge from a former nuclear laundry in the area.

Managed human health and ecological risk assessment activities and public interaction initiatives on a project for Cornell University. Assessments were conducted to determine appropriate remedial actions for a radioactive waste disposal site that operated from 1956 to 1978.

Providing consulting services to the City of San Francisco regarding radiological conditions at the former Hunters Point Shipyard as they relate to the suitability of associated land parcels for public housing.

Providing consulting services to the County of Sacramento, CA regarding radiological conditions at the former McClellan Air Force Base, which is undergoing conversion for private uses.

Providing consulting services to a company that operates landfills, to assist them in implementation of plans and procedures to ensure that radioactive materials are not received that would violate permits or result in unacceptable public or worker exposures.

Responsible for site characterization and risk analysis activities for a site-wide assessment of a 2,668-acre aeronautics, nuclear, and general research facility that experienced environmental contamination in the form of chemicals and radionuclides.

Created, set up, and ran a corporate radioactivity measurement laboratory to provide independent analyses of a subset of radiological environmental monitoring program samples for quality control purposes.

Prepared a source book of hazard analyses for commonly licensed radionuclides and uranium fuel cycle compounds.

Performed radiological surveillance of university labs; assisted with radioactive waste collection, processing, and disposal; performed sample analysis, bioassay, and leak testing; and conducted a film/TLD personnel dosimetry program.

Participated on a project group contracted to prepare a technical support document on waste classification for the Department of Energy's National Low-Level Waste Strategy Document.

Publications

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Ripple, S.R., T.E. Widner, E.J. Mangione, N.C. Morin, and K. Gottlieb 1991. "Rocky Flats Toxicologic Review and Dose Reconstruction Project." Presented at the Health Physics Society Annual Meeting, Washington, D.C.

Widner, T.E., B.W. Graham, K.E. Shank, and L.A. Burchfield 1985. "Determination of Radioiodine Transmission Through Effluent Monitor Sample Lines for the Susquehanna Steam Electric Station." Presented at the Health Physics Society Annual Meeting, Chicago, Illinois, May.

Widner, T.E., B.W. Graham, and K.E. Shank 1984. "Emergency Radiation Dose Assessment Methods Incorporating River Valley Terrain Effects." Presented at the Health Physics Society Annual Meeting, New Orleans, Louisiana, June.

Lynn R. Anspaugh, Ph.D.

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October 5, 2004

Ms. Amy Brownell, P.E.
San Francisco Department of Health
1390 Market Street, Suite 910
San Francisco, CA 94111

Dear Ms. Brownell:

Introduction

I have been retained to overview the evaluation and assessment of the radiological issues involved in the transfer of the Hunters Point Shipyard (HPS) from the US Navy to the San Francisco Redevelopment Agency. My qualifications for this review are given at the end of this letter.

To date, I have reviewed material submitted to the City and County of San Francisco regarding the transfer of Parcel A and examined the independent review of these materials by Mr. Tom Widner of ChemRisk. Mr. Widner performs a comprehensive review of all pertinent information and I examine his review and perform an additional review of any aspect that appears to warrant further examination.

Information Reviewed

In order to perform my review I have examined the following documents, which are listed alphabetically by author:

- Bailey DG. Release of base realignment and closure (BRAC) property (Building 322) at Hunters Point Shipyard, San Francisco, California. Sacramento: State of California Department of Health Services; Memorandum to Mr. Rick Moss; August 27, 2004.
- Dean S, Harrison J, Barnette J, Goodman R. Radiological scanner van survey, Hunters Point Naval Shipyard, California, September 9–12, 2002. Las Vegas: US Environmental Protection Agency Radiation and Indoor Environments National Laboratory; March 2003.
- Dean SM. HPS HRA Volume II comments. San Francisco: US Environmental Protection Agency Region IX; Memorandum to Mr. Michael Work; April 21, 2004.
- Dean SM. HPNS Building 322 radiation confirmation survey. San Francisco: US Environmental Protection Agency Region IX; Memorandum to Mr. Michael Work; July 23, 2004.

- Loizos L. Re: Draft final historical radiological assessment, Volume II, History of the use of general radioactive materials, 1939-2003, Hunters Point Shipyard, dated February 25, 2004. San Francisco: Arc Ecology; Letter to Keith Forman; April 27, 2004.
- Pearce RE. Hunters Point – City of SF request for rad. clean-up guidance. San Diego: US Navy; Comments regarding Parcel A sewers; September 8, 2004.
- Schneider A, Resnikoff M. Independent assessment of the Hunters Point historical radiological assessment. New York: Radioactive Waste Management Associates; April 2004.
- Slattery G, Delong D. Final, Final status survey and results, Revision 0, July 27, 2004, Building 322 (Donahue Street and Innes Street), Hunters Point Shipyard, San Francisco, California. San Diego: Department of the Navy, Naval Facilities Engineering Command Southwest Division; July 27, 2004.
- TechLaw, Inc. EPA comments on the draft final historical radiological assessment, Volume II, Hunters Point Shipyard, San Francisco, California, February 2004. San Francisco: TechLaw, Inc.; undated.
- Trombadore C. USEPA radiological scanner van report, Hunters Point Shipyard, March 2003. San Francisco: US Environmental Protection Agency Region IX; Letter to Mr. Keith Forman, Mr. Chein Kao, and Ms. Julie Menack; April 10, 2003.
- US Navy. Draft final historical radiological assessment, Volune 2, History of the use of general radioactive materials 1939–2003. San Diego: Naval Sea Systems Command; February 2004.
- Vetromile J. Draft final, Finding of suitability to transfer for Parcel A (Revision 3), Hunters Point Shipyard, San Francisco, California. San Diego: Department of the Navy, Naval Facilities Engineering Command Southwest Division; September 1, 2004.
- Work M. Re: Draft final historical radiological assessment, Volume II, Hunter's Point Shipyard, San Francisco, California, February 2004. San Francisco: US Environmental Protection Agency Region IX; Letter to Mr. Keith Forman; April 27, 2004.

In addition to the sources of data mentioned above, I have reviewed carefully the letter dated September 17, 2004, written by Mr. Tom Widner to Ms. Amy Brownell on the subject, "Letter regarding radiological issues related to the proposed transfer of the 'Parcel A' portion of Hunters Point Shipyard." This 14-page letter reviews radiological issues related to Parcel A. This letter concludes that radiological health issues related to the transfer of Parcel A have been investigated and resolved.

Conclusions of my Review

I endorse without reservation the contents and conclusions of Mr. Widner's letter. In my opinion there are no unresolved radiological issues concerning the transfer of Parcel A to the San Francisco Redevelopment Agency, and such a transfer would not entail any radiological risk to persons living or visiting the areas included in Parcel A. Other areas at the HPS (i.e., areas

other than those within Parcel A) continue to be investigated, and it is reasonable to expect that some additional remedial measures may be required.

Qualifications

I am well qualified to review the information of concern to the City and County of San Francisco by means of my education, training, experience, and published research. I hold a Bachelor of Arts Degree with High Distinction from the Nebraska Wesleyan University with a major in physics (1959); a Master of Bioradiology Degree from the University of California, Berkeley, with a specialty in health physics (1961); and a Doctor of Philosophy Degree with a specialty in biophysics from the University of California, Berkeley (1963).

Following receipt of my Ph.D. degree I worked at the Lawrence Livermore National Laboratory until retirement at the end of 1996. Since that time I have been at the University of Utah in a position of Research Professor, and I also do independent work through my sole proprietorship, Lynn R. Anspaugh, Consulting. During my career I have been the author or co-author of 265 published articles and reports and of an additional 54 abstracts.

My work has focused almost entirely on environmental health physics, radiation-dose reconstruction, and environmental risk analysis. I have also, as a member of a team, prepared and presented several courses and seminars on radiation biology, radiation-dose reconstruction, and risk assessment at a number of universities, including San Jose State University; University of California, Los Angeles; Stanford University; University of California, Davis; and University of California, Berkeley.

My research and publications have originated from a number of activities, some of which are enumerated below:

- Principal Investigator, Project on the experimental measurement of the resuspension of plutonium and other radionuclides from soil surfaces;
- Principal Investigator, Development of a model to predict the movement of tritium (^3H) in biological systems;
- One of several investigators, Development of a system to assess the real time impacts of radionuclides in Utah from releases from the Nevada Test Site;
- Principal Investigator, Development and calibration of a field-spectrometry system to measure radionuclides in the environment;
- Co-Principal Investigator, Study of the impact of the emission of ^{222}Rn from The Geysers Geothermal Power Plant;
- Scientific Director, The Imperial Valley Environmental Project, which was a comprehensive project to examine the environmental impacts of the use of geothermal energy;
- Project Director, Experimental determination of the inventory and distribution of all man-made radionuclides in surface soil at the Nevada Test Site;

- Scientific Director, Off-Site Radiation Exposure Project, which was the first major dose-reconstruction project carried out in the United States. The goal was to assess the radiation dose to hypothetical receptors and some actual persons from the past releases of radionuclides from the Nevada Test Site;
- Co-Principal Investigator, Assessment of the use of radionuclides as tracers in the enhanced recovery of oil and gas;
- Investigator, Assessment of the global impacts of the Chernobyl accident;
- Co-Principal Investigator, Development of a dose-assessment model for the possible future use of the Nevada Test Site;
- Scientific Director, The Nevada Applied Ecology Group, which conducted a radioecological study of radionuclides deposited in soil at the Nevada Test Site;
- Scientific Director, The Basic Environmental Compliance and Monitoring Program for the Nevada Test Site;
- Member, Interagency Nuclear Safety Review Panel, which was part of the Office of Science and Technology Policy charged with evaluating the potential impacts of radionuclides being launched into space;
- Leader, Working Group on Environmental Transport of the US-USSR Joint Coordinating Committee on Nuclear Reactor Safety;
- Member, Project on the reconstruction of thyroid dose to children in Belarus and Ukraine exposed as a result of the Chernobyl accident;
- Member, Project on the reconstruction of collective dose to the population living in Ukrainian areas contaminated by the Chernobyl accident;
- Co-Principal Investigator, Project on the use of measurements of ¹²⁹I to reconstruct the deposition of ¹³¹I in Belarus from the Chernobyl accident;
- US Principal Investigator, Project on dose reconstruction for the population living on the Techa River, which is downstream of the first Russian facility for the production of plutonium;
- Principal Investigator, Evaluation of the internal dose to the population of the contiguous United States from testing of nuclear weapons at the Nevada Test Site and of large tests at other sites (global fallout). My two reports on this subject have been incorporated in a report to Congress by the US Department of Health and Human Services;
- Investigator, Reconstruction of radiation dose from the testing of nuclear weapons at the Semipalatinsk Polygon, Kazakhstan;
- Investigator, Dose reconstruction in support of an epidemiologic study of radiogenic thyroid cancer in children from the testing of nuclear weapons in Nevada;
- Investigator, Dose reconstruction for Chernobyl clean-up workers enrolled in an epidemiologic study of radiogenic leukemia; and

- US Principal Investigator, Derivation of source terms for releases of ^{131}I and other radionuclides from the first Russian facility for the production of plutonium, evaluation of pathways through the environment to man, and reconstruction of dose to residents of Ozersk, Russia.

As part of my career work, I have participated in the work of many committees. Among them are:

- Review Panel on Total Human Exposure, Subcommittee on Strategies and Long-Term Research Planning, Science Advisory Board, Environmental Protection Agency;
- Department of Energy/Office of Health and Environmental Research Interlaboratory Task Group on Health and Environmental Aspects of the Soviet Nuclear Accident;
- United States Delegation to the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR);
- Biomedical and Environmental Effects Subpanel, Interagency Nuclear Safety Review Panel, Office of Science and Technology Policy;
- Executive Steering Committee, University of California Systemwide Toxic Substances Research and Teaching Program;
- National Laboratory Directors' Environmental and Public/Occupational Health Standards Steering Group;
- National Council on Radiation Protection and Measurements, an independent organization chartered by the US Congress;
- International Committee to Assess the Radiological Consequences in the USSR for the Chernobyl Accident, International Atomic Energy Agency;
- California Radiation Emergency Screening Team, California Department of Health Services;
- Environmental Management Advisory Committee, US Department of Energy;
- National Academy of Sciences/National Research Council Committee on an Assessment of CDC Radiation Studies;
- Radiation Advisory Committee, Science Advisory Board, US Environmental Protection Agency; and
- National Academy of Sciences/National Research Council Committee on Risk-Based Approaches for Transuranic and High-Level Radioactive Waste.

Selection for service on many of the above named committees and panels is recognition of my technical expertise and experience. In addition, I have received the following honors from my colleagues or other organizations.

- Elected Fellow, Health Physics Society;
- Elected President, Environmental Section, Health Physics Society;
- Elected President, Northern California Chapter, Health Physics Society;
- Elected to Board of Directors, Great Salt Lake Chapter, Health Physics Society;
- Elected to Honorary Membership, National Council on Radiation Protection and Membership (following service as an elected member of the Council for two six-year terms);

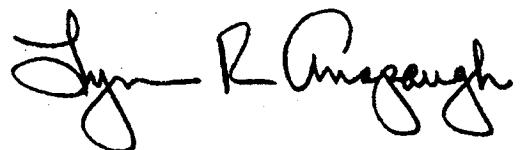
Ms. Amy Brownell, P.E.

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- Selected for listing in *American Men and Women of Science*;
- Selected for listing in *Who's Who in the West*;
- Selected for listing in *Who's Who in America*;
- Selected for listing in *Who's Who in Medicine and Health Care*; and
- Selected for listing in *Who's Who in Science and Engineering*.

Sincerely yours,



Lynn R. Anspaugh, Ph.D.

Attachment L

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
1.A Transportation Demand Management Adopt a Transportation Demand Management (TDM) approach by forming a Transportation Management Association and preparing and adopting a Transportation System Management Plan which contains the elements specified in Measure 1.B.	See below	See below	See below	See below
1.A.1 Transportation Management Association Form a HPS Transportation Management Association (TMA) composed of SFRA staff, City agency staff from the Public Transportation Commission, Parking and Traffic Commission* and the Department of Public Works; Hunters Point Shipyard owners, lessees and residents; and Bayview-Hunters Point community members to implement a Transportation System Management Plan (TSMP). The initial TMA group will be appointed by the Mayor for an 18 month term and will report to the Redevelopment Agency Commission (“Agency Commission”). As part of the development of the TSMP, the initial TMA will recommend procedures to the Agency Commission for future appointments to the TMA. The TMA will have no funding authority, but will develop a proposed TSMP for adoption by the SFRA. The TSMP will identify funding needs, recommend potential funding sources and develop a phasing schedule consistent with the redevelopment phasing plan for implementation of identified measures. The TMA will monitor the effectiveness of the mitigation measures and the TSMP for the SFRA. The TMA will provide an annual report to the SFRA on the status of the TSMP implementation.	In accordance with Attachment 28 of the DDA, Developer will work with SFRA and District 10 Supervisor to identify and make recommendations to Mayor for appointments to TMA Board of Directors (5 members) and Steering Committee (11 members). Developer to participate as member of TMA Steering Committee.	Developer to work with SFRA and District 10 Supervisor to recommend appointments upon the closing of the sale of Parcel A to Developer. List of recommendations to be submitted to Mayor within 6 months following closing of the sale of Parcel A to Developer. Developer to participate as member of TMA Steering Committee.	This mitigation measure is a condition of the DDA, which is enforceable by the SFRA. TMA, once appointed, also responsible for implementation. SFRA to confirm condition of the DDA prior to first new lease or development approval. SFRA to consult with TMA and TMA to submit periodic status reports to SFRA.	Initial TMA to provide recommendations to SFRA Commission regarding procedures for future appointments to TMA.

*The Public Transportation Commission and the Parking and Traffic Commission are now within the Municipal Transportation Agency

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
1.B Transportation System Management Plan Have the TMA prepare and the SFRA and affected City agencies adopt a TSMP. The TSMP shall identify program goals and implementing mechanisms for each of the following elements:	Developer to participate, as member of TMA Steering Committee, in preparation of TSMP. Developer will ensure each element is addressed in a timely manner.	In order to assure TSMP is in place prior to first, new lease or development approval, TSMP will be prepared prior to commencement of construction of vertical development on Parcel A. Adoption of TSMP by SFRA and affected City agencies prior to the issuance of the 1000 th building permit for vertical development on Parcel A. See DDA Attachment 28 for more details on implementation timeframes for each element.	TMA, SFRA	TMA to prepare TSMP; SFRA to adopt prior to issuance of the 1000 th building permit for vertical development on Parcel A.
1.B.1 Transit Pass Sales Establish a convenient location or locations within the boundaries of HPS for selling transit passes.		TSMP will provide that initial location will be in the on-site temporary marketing trailer; on a permanent basis, the location will be at the office of the site manager.	Same as above.	Same as above.
1.B.2 Pedestrian, and Bicycle Information Provide maps of local pedestrian and bicycle routes, transit stops and routes, and other information, including bicycle commuter information, on signs and kiosks in occupied areas of HPS. Provide rideshare information and services through RIDES or an equivalent program.		TSMP will provide that initially transit and other promotional materials and RIDES services will be provided at the on-site temporary marketing trailer; on a permanent basis, these materials and services will be provided at the office of the site manager.	Same as above.	Same as above.
1.B.3 Employee Transit Subsidies Require major employers to use a transit subsidy system (e.g., through the		Requirements will be met in subsequent phases as major	Same as above.	Same as above.

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
Commuter Check Program) for their employees by incorporating transit subsidy requirements in the agreements between the SFRA and developers. The TMA will identify major employers, recommend transit subsidy programs and identify transit subsidy systems that will provide employers with incentives to hire local employees as a way of reducing vehicle miles traveled.	require inclusion in pre-leasing packet for commercial tenants.	employers locate in HPS.		Same as above.
1.B.4 Expand Transit Services and Monitor Transit Demand.	Developer to participate, as member of TMA Steering Committee, in preparation of TSMP. TMA to conduct annual surveys in May at front and back gates to monitor vehicle trips and occupancy on a typical weekday.	See DDA Attachment 2B for timeframes. Ongoing; TMA to develop phasing plan for implementation of transit improvements.		Same as above.
1.B.5 Secure Bicycle Parking	Identify incentives and disincentives to stimulate demand for transit and other alternative modes of transportation in place of the single occupancy automobile.	Requirement for bicycle parking spaces will be imposed by City. Developer will participate in preparation of TSMP as member of TMA Steering Committee.	Requirements for lockers and showers in buildings will be met in subsequent phases as major employers locate in HPS. Program for bicycle use in HPS can be developed through TSMP.	Same as above.

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
1.B.6 <u>Parking Management Guidelines.</u> Establish mandatory parking management policies for the private operators of parking facilities in HPS to discourage long-term parking. Set aside desirable parking areas for rideshare vehicles and alternative fuel vehicles.	Not applicable to Parcel A because no parking facilities are planned.	Not applicable to Parcel A.	N/A	N/A
1.B.7 <u>Flexible Work Time/Telecommuting</u> Where feasible, offer HPS employees the opportunity to work on flexible schedules and/or telecommute so they can avoid peak hour traffic conditions.	Not applicable to Parcel A.	Requirements will be met in subsequent phases as employers locate in HPS; also will be addressed as part of TMA prepared TSMP.	N/A	N/A
1.B.8 <u>Shuttle Service</u> Require shuttle service to serve all redeveloped portions of HPS either through the provision of shuttle service by developers, large employers or another entity or entities. The shuttle service will operate between HPS and regional transit stops in San Francisco (e.g., MUNI, Third Street LRT, Bay Area Rapid Transit (BART), CalTrain, Transbay transit terminal, and ferry terminal). Consider use of alternative fuel vehicles for the shuttle service.	Developer, through participation as a member of the TMA Steering Committee.	TMA to establish thresholds for providing this service consistent with the availability of transit services.	TMA, SFRA and City agencies with responsibility.	TMA to prepare TSMP; SFRA to adopt prior to issuance of the 1000 th building permit for vertical development on Parcel A. TMA to provide SFRA with annual report on implementation of TSMP.
1.B.9 <u>Monitor Physical Transportation Improvements</u> Monitor physical transportation improvements, such as street repaving and resurfacing and installation of street lighting, and ensure that planned improvements are implemented when necessary to meet the needs of new residents and employees.	Developer will phase on-site infrastructure improvements to meet needs of vertical development.	As provided in DDA, Attachments 9 and 28.	Same as above.	Same as above.
1.B.10 <u>Ferry Service</u> Assist the Port of San Francisco and others in ongoing studies of the feasibility of expanding regional ferry service. Assist in implementing feasibility study recommendations (if any) related to HPS service.	TSMP will provide for the TMA to assist the Port and WTA in ferry feasibility studies. Developer will supply demand data to WTA for provision of ferry service.	When the site has at least 4,000 population or 4,000 jobs or as demand warrants.	Same as above.	Same as above.

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
1.B.11 Local Hiring Practices Require the TMA to set a goal to reduce traffic and air quality impacts by hiring workers who reside in the Bayview-Hunters Point neighborhood to fill new jobs at HPS. Qualified workers who reside in the Bayview-Hunters Point neighborhood should be given priority for new employment opportunities. Require compliance with existing SFRA local hiring requirements and the City's "First Source" hiring program. Monitor local hiring on an annual basis to determine if the goal is being met and adjust the program as necessary.	Developer, through compliance with DDA and Attachment 24 to DDA.	In accordance with DDA and Attachment 24 to DDA.	SFRA through DDA	In compliance with DDA, and Attachment 24 to DDA.
1.B.12 Clean Air Program Assist the City's Clean Air Program in establishing natural gas fueling stations and electric charging bays in HPS and in implementing other means identified by the Clean Air Program for owners, tenants and users of HPS to use alternative fuel vehicles.	Developer will work with Clean Air Program to examine feasibility of electric charging bays in HPS.	Feasibility of electric charging bays as determined by Developer, in coordination with the Clean Air Program. Feasibility of other means for use of alternative fuel vehicles will be examined as part of TSMP process.	TMA, SFRA, and City agencies with responsibilities.	TMA to prepare TSMP; SFRA to adopt prior to issuance of the 1000 th building permit for vertical development on Parcel A.
1.C. Phelps/Evans Eliminate the southbound left-turn lane and re-route turns via Phelps Street to Evans Street. Signalize the Phelps/Evans intersection and remove parking along Phelps and Evans Street. In addition, adopt a transportation system management approach as described under Mitigation Measure 1.B.	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.
1.D. Evans/Cesar Chavez To improve operations and reduce delays at this intersection, restripe the existing northbound shared left/right-turn lane on Evans Avenue to create an exclusive left-turn lane and an exclusive right-turn lane. Widen the Evans Avenue northbound approach at Cesar Chavez Street. The southeast corner curb return will require structural modifications to the existing viaduct. Change the existing signal timing plan to include the exclusive left-turn and right-turn lanes.	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.
1.E. Adequate Transit Service	Refer to Measure 1.B.4	Refer to Measure 1.B.4 above.	Refer to Measure 1.B.4	Refer to Measure 1.B.4

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
Monitor transit demand at HPS on an annual basis and ensure that adequate transit service is provided to meet or exceed demand, as required by the Transportation System Management approach described under Mitigation Measure 1.B.4.	above.	above.	above.	above.
1.F Pedestrian and Bicycle Facilities Require completion of planned pedestrian and bicycle facilities as part of adjacent development. Monitor and ensure completion of these facilities as part of the TSMP described under Mitigation Measure 1.B.2.	Refer to Measure 1.B.2 and DDA Attachment 28.	Refer to Measure 1.B.2 and DDA Attachment 28.	Refer to Measure 1.B.2 and DDA Attachment 28.	Refer to Measure 1.B.2 and DDA Attachment 28.
2.A TSMP Measures Form a Hunters Point TMA and prepare a TSMP as described in Mitigation Measures 1.A and 1.B.	Refer to Measures 1.A and 1.B above.	Refer to Measures 1.A and 1.B above.	Refer to Measures 1.A and 1.B above.	Refer to Measures 1.A and 1.B above.
2.B Construction PM₁₀ Dust emissions from construction sites are potentially significant. The mitigation plan requires the developer to implement best management practices (BMPs) to minimize potential emissions. These BMPs include: Seed and water unpaved, inactive areas. Minimize clearing and grading activities during periods of sustained wind. Water and/or treat unpaved areas to minimize construction and windblown dust. Sweep paved areas to minimize dust emissions from traffic and windblown dust. Cover trucks carrying soil and/or construction debris. Limit the area of excavation to manageable units and cover soil storage piles.	Pursuant to Art. 31, the developer will prepare a Dust Control Plan and a Disposal Plan. These plans will include the BMPs required by this mitigation measure and other BMPs as appropriate. Subcontractors will be required to comply with these plans through contract specifications.	A Dust Control Plan and a Disposal Plan are both required by Art. 31. Each of these plans will be submitted to DPH as a prerequisite to permit issuance and implemented during Parcel A construction activities.	This mitigation measure and Art. 31 are conditions of the DDA, which is enforceable by the SFRA. DPH, DBI and DPW through Art. 31 and the permit issuance process.	SFRA, DPH, DPW or DBI to require evidence of compliance prior to construction through Art. 31 and the site permitting process.
2.C Toxic Air Contaminants SFRA will evaluate and permit all potential stationary sources of toxic air	Not applicable to Parcel A development because	Not applicable to Parcel A but would be implemented through	Not applicable to Parcel A but this mitigation measure is a	Not applicable to Parcel A but would require evidence

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
contaminants allowed at HPS as one facility and allow new potential stationary sources only if the estimated incremental toxic air contaminant health risk from all stationary sources at HPS is consistent with BAAQMD significance criteria for an industrial facility.	stationary sources of toxic air contaminants are not planned.	plan review and the site permitting process.	condition of the DDA, which is enforceable by the SFRA. In addition, Bay Area Air Quality Management District (BAAQMD) has enforcement authority to address this mitigation measure to the extent requirements are equivalent to applicable BAAQMD rules.	of compliance through plans and permit applications prior to permit approval for potential stationary sources of toxic air contaminants.
3. A Noise – Residential Construction			Not applicable to Parcel A because impact refers to residential development planned above commercial space east of Donahue Street in Parcel B.	Not applicable to Parcel A. Not applicable to Parcel A.
7.A Reuse Prior to Complete Remediation			Does not apply to Parcel A because it was remediated prior to transfer.	Not applicable to Parcel A. Not applicable to Parcel A.
			<ul style="list-style-type: none"> • Implement basewide restrictions on and notifications for leased areas prior to remediation (related to IR sites and areas of concern), as described below. • Prohibit users from disturbing soil or conducting intrusive activities without prior Navy approval and coordination with Federal and state regulatory agencies. Prohibitions could include, but are not limited to, shoveling, digging, trenching, installing wells, and conducting subsurface excavations. • Prohibit users from entering fenced-off areas, areas where environmental investigations are in progress, or areas where access is not authorized, as indicated by appropriate signs. • Restrict access to fenced areas of Parcel E until remediation activities have been completed. 	Not applicable to Parcel A. Not applicable to Parcel A.

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
<ul style="list-style-type: none"> • Maintain intact the current condition of all flooring and interior and exterior pavement and concrete in lease area. • Prohibit the use of groundwater at HPS for any purpose. • Notify users that petroleum hydrocarbons and hazardous substances have been detected in the soil and groundwater at HPS. • Notify users that investigations and remediation are ongoing at IR sites at HPS. Lessee must not interfere with ongoing environmental investigation and remediation efforts. Areas where sampling and remediation crews are working must be avoided. • Prohibit access to waterfront areas for fishing until it is determined by EPA through the CERCLA process that Parcel F is remediated to a condition protective of human health and ecological resources. 				
<p>7. B Hazardous Materials – Construction Prior to Remediation</p> <p>The following precautionary measures will be implemented by the project proponent during necessary construction activities prior to remediation. These measures are general and will be refined based on site-specific information and consultation with regulatory agencies.</p> <ul style="list-style-type: none"> • Obtain site-specific information about soil or groundwater that would be disturbed through new testing or existing information from the Navy and consultation with regulatory agencies. • Before disturbing soil or groundwater, or conducting intrusive activities such as shoveling, digging, trenching, installing wells, subsurface excavations, or building renovation, obtain Navy approval and coordinate with Federal and state regulatory agencies. This coordination would result in an identification of precautionary measures to be implemented during construction activities. The Safety Plan (HASP) (see Section 3.7.5) that is consistent with the contaminants present. • Implement dust suppression measures to limit airborne contaminants in accordance with BAAQMD requirements. • Handle and dispose of soil in a manner consistent with the contamination 		<p>Does not apply to Parcel A because it was remediated prior to transfer.</p>	<p>Not applicable to Parcel A.</p>	<p>Not applicable to Parcel A.</p>

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
present, as required by Federal, state, and local laws and regulations.	<p>7. C Hazardous Materials – Reuse after Complete Remediation</p> <p>Implement and monitor compliance with institutional controls (ICs) designed to be protective of public health, as determined by law and in consultation with the regulatory agencies. These institutional controls would likely include a prohibition on the use of groundwater and on residential uses in non-residential areas, notification regarding residual contamination, and encapsulation methods. ICs for Parcel A re:</p> <ol style="list-style-type: none"> 1. Groundwater Prohibition 2. Asbestos 3. Lead-Based Paint 4. Deed notices 	<p>Art. 31 requires compliance with the ICs in the Parcel A deed. The ICs for Parcel A include deed notices and requirements. The developer will comply with ICs and Art. 31 to satisfy this mitigation measure, as appropriate to the development of Parcel A.</p> <p>Upon the developer's initiation of the site permitting process with DBI and DPW, DBI and DPW will refer the developer to DPH for Art. 31 review and compliance.</p>	<p>ICs will be in place at the time of the property conveyance. Deed notices and requirements will be contained in the Parcel A Deed. Ongoing implementation of ICs will occur during the development of Parcel A.</p> <p>Upon the developer's initiation of the site permitting process with DBI and DPW, DBI and DPW will refer the developer to DPH for Art. 31 review and compliance.</p>	<p>This mitigation measure and Art. 31 are conditions of the DDA, which is enforceable by the SFRA.</p> <p>DPH, DBI and DPW through Art. 31 and the permit issuance process.</p> <p>Navy may enforce ICs through the Parcel A deed.</p>

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
7.D Hazardous Materials – Construction after Remediation Perform construction activities in a manner consistent with institutional controls designed to be protective of public health, as determined in consultation with the regulatory agencies, and in accordance with CAL OSHA regulations. Take the following additional steps, where warranted by site-specific information: <ul style="list-style-type: none"> • Obtain information on soil and groundwater contamination by sampling, reviewing existing Navy data, and/or consulting with regulatory agencies. When no sampling results are available, develop and implement a sampling program similar to that required under Article 22A of the San Francisco Public Works Code. • If contamination is identified in the areas proposed for disturbance, prepare a site mitigation plan, similar to that required under Article 22A of the Health Code. If applicable, implement the requirements of Cal. Code Reg. Tit. 8 § 5192 (Hazardous Waste Operations and Emergency Response). • Dispose of groundwater in accordance with applicable permits. 	Compliance with Art. 31 will satisfy this mitigation measure. Pursuant to Art. 31, the developer will prepare and submit a Stormwater and Erosion Control Plan, a Health and Safety (which will include a Contingency Plan, as discussed below for mitigation measure 7.E), and a Dust Control Plan. If hazardous materials are encountered, the situation will be addressed through compliance with these plans and Art. 31 sampling protocols and requirements.	A Stormwater and Erosion Control Plan, a Health and Safety, and a Dust Control Plan are required by Art. 31. Each of these plans will be submitted to DPH as a prerequisite to permit issuance and implemented during Parcel A construction activities.	This mitigation measure and Art. 31 are conditions of the DDA, which is enforceable by the SFRA. DPH, DBI and DPW through Art. 31 and the permit issuance process.	SFRA, DPH, DPW or DBI to require evidence of compliance prior to construction through Art. 31 and the site permitting process.
7.E Construction Contingency Plan This mitigation measure requires notification to contractors that unknown hazardous materials may be present and encountered during construction activities. A contingency plan should be developed that includes the following steps: <ul style="list-style-type: none"> • Stop work. • Notify the DPH • Secure the area and prevent access • Sample the material • Handle and dispose of the material in compliance with applicable laws and 	The developer will prepare a Contingency Plan. The Contingency Plan will be part of the Health and Safety Plan the developer will prepare to comply with Art. 31. The Health and Safety Plan, including the Contingency plan, will satisfy the requirements of this	A Health and Safety Plan is required by Art. 31, and will include the Contingency Plan. The plans will be submitted to DPH as a prerequisite to permit issuance and implemented during Parcel A construction activities.	Art. 31 are conditions of the DDA, which is enforceable by the SFRA. DPH, DBI and DPW through Art. 31 and the permit issuance process.	SFRA, DPH, DPW or DBI to require evidence of compliance prior to construction through Art. 31 and the site permitting process.

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
regulations <ul style="list-style-type: none"> Resume work only after clearance from the DPH 	mitigation measure, as well as address requirements for personnel training, equipment, materials and other on-site operations. Subcontractors will be required to comply with these plans through contract specifications.	DBI and DPW, DBI and DPW will refer the developer to DPH for Art. 31 review and compliance.	satisfied, as appropriate. DTSC and Cal-OSHA will have enforcement authority to address this mitigation measure to the extent its requirements are equivalent to applicable agency rules.	SFRA, DPH, DPW, DBI or SFPPUC to require evidence of compliance prior to construction through Art. 31 and the site permitting process.
7. F Hazardous Materials – Ecological Exposure For surface water impacts, follow all conditions of the state of California storm water construction permit, including implementing BMPs to reduce storm water runoff from the site. For groundwater discharge impacts, follow all permit requirements for discharge into the storm water system or sanitary sewer system. Treat water as appropriate to comply with discharge levels as required by the permit. Assess potential effects on groundwater gradients within construction areas if dewatering is proposed or if new utility lines are proposed that could act as conduits for contaminants in groundwater. Conduct dewatering activities and design utility installations such that contamination does not spread to the Bay or other ecologically sensitive areas. New storm drains shall have watertight joints, such as rubber gaskets. Methods to be considered could include installing sheet piling, groundwater pumping/recharge, and installing utility lines in impermeable bedding material. For boring and pile driving activities along the Bay, drive the piles directly into the sediments without boring where possible, to minimize and localize sediment disruption. Where pile driving without drilling is not possible due to shallow bedrock, drive a casing to the solid material, preventing collapse of the material and allowing drilling to occur within the casing without excessive sediment disruption. Then place the pile in the casing and backfill with concrete. Perform dredging activities in a manner consistent with institutional controls established via the CERCLA process. Require consultation with agencies	Pursuant to Art. 31, the developer will prepare and implement a Stormwater Erosion and Control Plan and a Dust Control Plan. In conjunction, these plans will mitigate potential impacts to ecological receptors. Subcontractors will be required to comply with these plans and this mitigation measure through contract specifications. Boring, pile driving, and dredging are not applicable to Parcel A development.	A Stormwater and Erosion Control Plan and a Dust Control Plan are required by Article 31. The plan will be submitted to DPH as a prerequisite to permit issuance and implemented during Parcel A construction activities. Upon the developer's initiation of the site permitting process with DBI and DPW, DBI and DPW will refer the developer to DPH for Art. 31 review and compliance.	This mitigation measure and Art. 31 are conditions of the DDA, which is enforceable by the SFRA. DPH, DBI and DPW through Art. 31 and the permit issuance process. In addition, DTSC, RWQCB and BAAQMD requirements will be satisfied, as appropriate. These agencies will have enforcement authority to address this mitigation measure to the extent its requirements are equivalent to applicable agency rules.	SFRA, DPH, DBI, DPW or SFPPUC to monitor compliance with plans and permits as necessary during Parcel A construction activities.
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Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
represented in the Army Corps of Engineers Interagency Dredged Material Management Office regarding appropriate methods for limiting disturbance of sediment, containing suspended sediment to the immediate area being dredged, and additional measures to be protective of human health and the environment as described in Section 3.7.5 (under Dredging).				Not applicable to Parcel A.
7.G <u>Control on Cross Contamination of Aquifers During Construction</u>	Not applicable to Parcel A.		Not applicable to Parcel A.	Not applicable to Parcel A.
Place piles in a manner so that there is no conduit for groundwater migration along pile edges. Where possible, drive piles directly into sediments without drilling. If drilling is required, drive casing into bedrock, drill within casing, and backfill with cement grout.				SFRA, DPH, DPW or DBI to review construction plan procedures through Art. 31 and site permitting process.
8. A <u>Handling Naturally Occurring Asbestos During Construction</u>	Pursuant to Art. 31, the developer will prepare a Stormwater and Erosion Control Plan, a Dust Control Plan, a Soil Importation Plan, and a Health and Safety Plan are required by Art. 31. The plans will be submitted to DPH as a prerequisite to permit issuance and implemented during Parcel A construction activities.		This mitigation measure and Art. 31 are conditions of the DDA, which is enforceable by the SFRA.	SFRA, DPH, DBI or DPW to monitor compliance with plans and permits as necessary during Parcel A construction activities.
Continuously wet materials Wet and cover stockpiles Do not use as road surfacing or paving material	In addition, Art. 31 requires a Health and Safety Plan. Construction workers will be required to take precautions with regard to naturally occurring asbestos as described in that plan.		Upon the developer's initiation of the site permitting process with DBI and DPW, DBI and DPW will refer the developer to DPH for Art. 31 review and compliance.	In addition, DTSC, RWQCB and BAAQMD requirements will be satisfied, as appropriate. These agencies will have enforcement authority to address this mitigation measure to the extent its requirements are equivalent to applicable agency rules.
Serpentinite used as fill material should be covered with a cap of clean, non-serpentinite fill at least 1 foot thick	Implement institutional controls to prevent future excavation		In addition, Art. 31 requires a Health and Safety Plan. Construction workers will be required to take precautions with regard to naturally occurring asbestos as described in that plan.	
Treat excavated materials with greater than 1% asbestos by weight as hazardous waste and transport and dispose accordingly	Subcontractors will be required to comply with these plans through contract specifications.			

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
8.B Existing Building Survey for Seismic Hazards Before increasing the occupancy of existing buildings, survey buildings that may be unsafe in the event of an earthquake, and take appropriate steps to prevent injury. Those steps could include interior modifications, bracing, retrofits, and/or access restriction.	Through the preparation of building permit plans for any existing buildings to be retained, applicant will include the required building modifications.	Upon application for building permit.	DBI through the permit process, DPH and DPW as appropriate	SFRA, DBI to monitor compliance with plans and permits.
9.A Storm Water Improvement Design to Control CSO Volumes Eliminate projected increases in combined sewer overflow (CSO) volumes caused by storm water discharges to the City's combined system by upgrading or replacing the separated system at HPS (Option 1 or 2). Also consider ways to offset non-significant increases attributable to sanitary flows. Arrange for the SFPUC to condition permits issued for groundwater discharge to the City's combined sewer system, so that discharges do not occur in wet weather when overflows are anticipated to occur.	Developer to implement pursuant to DDA Attachment 9, Infrastructure Plan.	Developer to implement pursuant to DDA Attachment 9, Infrastructure Plan.	Agency through the DDA and DPW and SFPUC through permit review process.	SFRA, DPW and SFPUC to monitor.
9. B Storm Water Discharge Quality To ensure that the quality of storm water discharges improves as anticipated, implement the following measures: <ul style="list-style-type: none"> • Develop and implement a SWPPP for HPS that is applicable to new development under the Redevelopment Plan to control the quality of direct discharges of stormwater to near-shore waters. The SWPPP will include provisions for controlling soil migration off site (e.g., silt fences, settling units) during periods of runoff and for monitoring possible sources of industrial contaminants. Develop the program in coordination with the San Francisco Public Utility Commission staff and according to guidelines contained in the California Municipal Storm Water Best Management Practice Handbook, the California Industrial/Commercial Storm Water Best Management Practice Handbook and U. S. EPA's proposed Phase II stormwater regulations. • As part of the SWPPP, implement BMPs such as public education and outreach pollution prevention, and good housekeeping • Construct stormwater retention and treatment areas on site to improve the 	<p>The developer will prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) as part of the Stormwater and Erosion Control Plan, including a SWPPP, and a Dust Control Plan, which are required by Article 31. The plans will be submitted to DPH as a prerequisite to permit issuance and implemented during Parcel A construction activities.</p> <p>Upon the developer's initiation of the site permitting process with the DBI and DPW, DBI and DPW will refer the developer to DPH for Art. 31 review and compliance.</p> <p>Subcontractors will be required to comply with these plans through contract specifications.</p>	<p>A Stormwater and Erosion Control Plan, including a SWPPP, and a Dust Control Plan, are required by Article 31. The plans will be submitted to DPH, DBI and DPW through Art. 31 and the permit issuance process.</p> <p>In addition, RWQCB requirements will be satisfied, as appropriate. RWQCB will have enforcement authority to address this mitigation measure to the extent its requirements are equivalent to applicable RWQCB rules.</p>	<p>This mitigation measure and Art. 31 are conditions of the DDA, which is enforceable by the SFRA.</p> <p>DPH, DBI and DPW through Art. 31 and the permit issuance process.</p> <p>In addition, RWQCB requirements will be satisfied, as appropriate. RWQCB will have enforcement authority to address this mitigation measure to the extent its requirements are equivalent to applicable RWQCB rules.</p>	<p>SFRA, DPH, DBI, or DPW to require evidence of compliance prior to construction through Art. 31 and the site permitting process.</p> <p>SFPUC to review through subdivision improvement plans and site permitting.</p> <p>SFRA, DPH, DBI, DPW or SFPUC to monitor compliance with plans and permits as necessary during Parcel A construction activities.</p>

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
<p>quality of discharges to the Bay. Specify in the SWPPP the locations of appropriate areas for stormwater infiltration that avoid toxic hot spot areas and capped areas and identify drainage patterns to direct stormwater to appropriate infiltration locations.</p> <p>10.A Drinking Water Distribution System</p> <p>Prior to authorization of reuse activities within a given area of HPS, assess deficiencies in the water distribution system and address them through planned infrastructure improvements or other actions.</p> <p>As proposed under the draft utility infrastructure plan, replace the potable water distribution system with a new system built to meet demands of proposed development. This will ensure the supply of safe potable water and adequate water pressure. As an alternative to wholesale system replacement, the City also could implement incremental improvements</p> <ul style="list-style-type: none"> In the upper housing area, cap the water distribution system and drain and abandon the 410,000-gallon (1.5-million liter) tank. Locate, excavate, and repair valves and lines. Replace PVC lines. Sample water at the point of consumption for chlorine, lead, and copper levels to ensure that it complies with the Safe Drinking Water Act. Install backflow preventors at the two San Francisco service points. Inspect service points for cross connections and for exposure to contamination so problems can be remediated, if needed. Install water meters to measure quantities delivered. 	<p>Developer will address through Infrastructure Plan as required by DDA, Attachment 9.</p>	<p>Developer will address in the Infrastructure Plan.</p>	<p>SFRA through the DDA, SFPUC and DPW through plan permit review process.</p>	<p>SFRA, DPW, SFPUC to monitor compliance.</p>
<p>Prior to authorization of reuse activities within a given area of HPS, assess fire fighting deficiencies in the water systems and address them through planned infrastructure improvements or other actions. Construct a new auxiliary water supply system to augment the water supply for fire fighting purposes. As an alternative to constructing a new system, the City may, in the interim, upgrade the existing potable</p> <p>10.B Fire Fighting Water Distribution System</p>	<p>Developer will address through Infrastructure Plan as required by DDA, Attachment 9.</p>	<p>Developer will assess deficiencies and develop appropriate system through the Infrastructure Plan submissions.</p>	<p>SFRA through DDA, DPW and Fire Department through plan/permit review.</p>	<p>SFRA, DPW and Fire Department to monitor during infrastructure construction.</p>

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

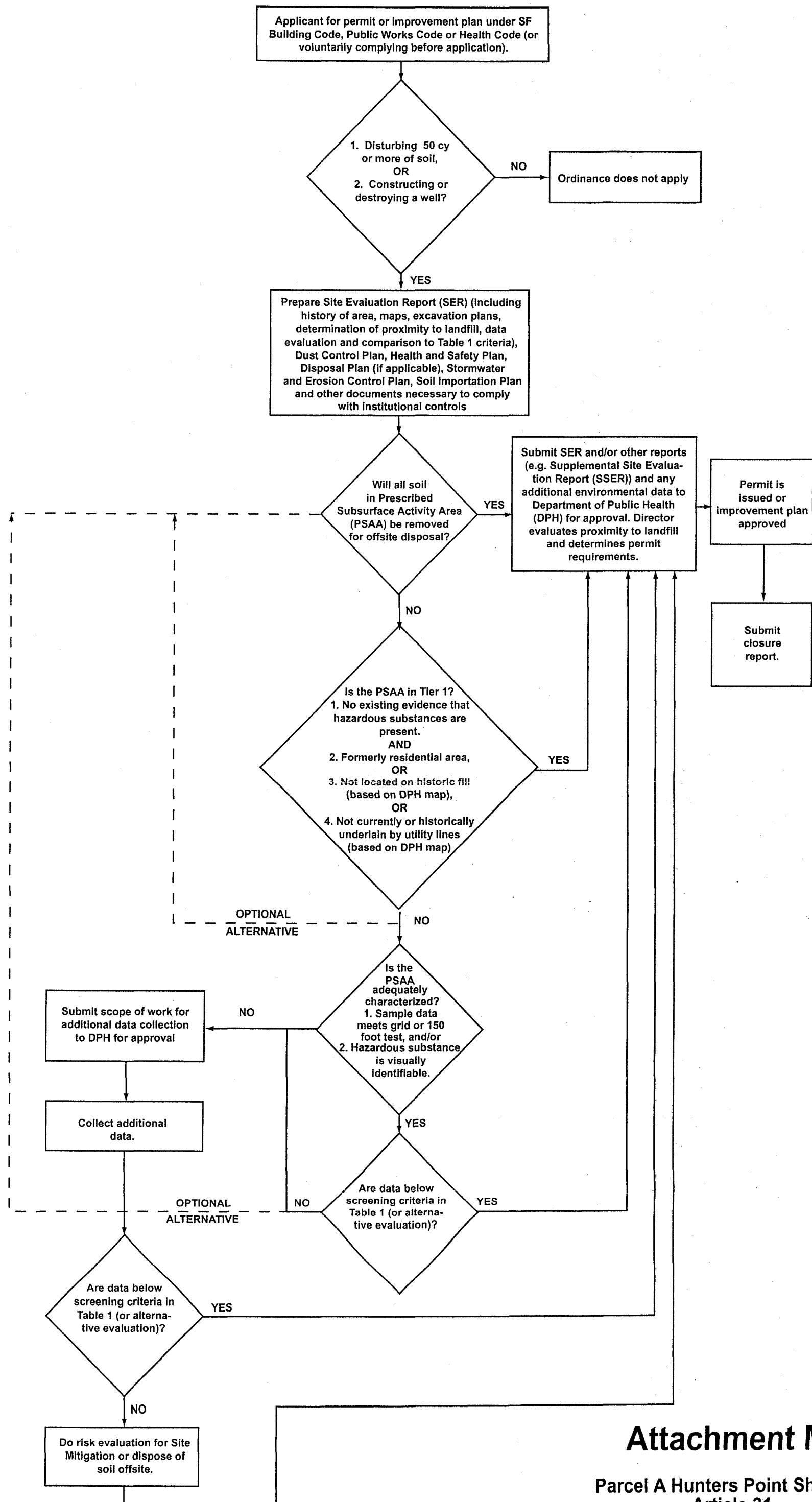
Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
water distribution system and fire hydrants to meet fire-fighting needs.	Developer will assess deficiencies and implement measures through the Infrastructure Plan as required by DDA, Attachment 9.	Developer will implement through the Infrastructure Plan submissions.	SFRA, DPW and SFPUC to monitor during infrastructure construction.	
10.C Storm Water Collection System Prior to authorization of reuse activities within a given area of HPS, assess deficiencies in the storm water collection system and address them through planned infrastructure improvements or other actions.	To mitigate impacts, implement the following measures: <ul style="list-style-type: none"> Upgrade or replace the storm water collection system as planned in each section of HPS prior to reuse. Restrict the amount of paved surfaces at HPS for no net increase. Design the storm water collection system to incorporate appropriate infiltration locations and drainage patterns contained in the SWPPP as provided in Measure 9.B. Install valves, gates, or duckbills at storm line discharge points to prevent tidal surges and movement of contaminated Bay Mud into the storm lines. 		SFRA through DDA, DPW and SFPUC through plan/permit review.	
10.D Sanitary Collection System Prior to authorizing reuse activities within a given area of HPS, assess deficiencies in the sanitary collection system and address them through planned infrastructure improvements or other actions. Construct a sanitary collection system at HPS to meet the Proposed Reuse Plan's sanitary collection needs.	Developer to assess deficiencies and address in Infrastructure Plan as required by DDA, Attachment 9.	Construction will be implemented according to the Infrastructure Plan.	SFRA through DDA, DPW and SFPUC through Infrastructure Plan/permit review.	
10.E Natural Gas System Prior to authorization of reuse activities within a given area of HPS, assess deficiencies in the natural gas system and address them through planned infrastructure improvements or other actions. Construct a natural gas system according to Federal, state, and local codes to meet the Proposed Reuse Plan's needs.	Developer will address through Infrastructure Plan as required by DDA, Attachment 9.	Developer will assess deficiencies in system prior to completion of dry utility plan. Compliance with codes will be determined during plan/permit review.	SFRA and DPW through review of Infrastructure Plan and related permits.	SFRA and DPW to monitor compliance during infrastructure construction.

Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
12.A Protection of Historical Resources Implement applicable measures to be contained in an MOA between the Navy and SHPO, with City/Agency concurrence. Measures to include: <ul style="list-style-type: none"> • Agreement by the City/Agency to designate NRHP-eligible buildings and structures as landmarks under San Francisco's own historic preservation ordinance or to prohibit demolishing these resources. • Agreement by the City/Agency to require the use of the Secretary of the Interior's <i>Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings</i> for all alterations proposed to historic resources identified as eligible for listing in the NRHP. • Agreement by the City/Agency to inform future project developers of the potential for encountering archeological resources and the required procedures to be followed (see Mitigation 12.D below). 	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.
12.B Alteration of Historical Resources Comply with the Proposed Reuse Plan, <i>Hunters Point Shipyard Redevelopment Plan</i> , and associated <i>Design for Development</i> , including requirements for retaining and identifying the historical resources described in Section 3.12. These documents also require that alterations that affect the historic resources be implemented according to the Secretary of the Interior's <i>Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings</i> (Proposed Reuse Plan Objective 12, Policy 6).	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.
12.C Construction Within Historic District Any construction within the Hunters Point Commercial Drydock Historic District will require compliance with the policies set forth in the Proposed Reuse Plan, which calls for creating an attractive and distinctive visual character for HPS that respects and enhances the natural features, the history, and the vision for mixed-use development oriented toward arts and industrial uses (Objective 11). It further states that the structures around Drydocks 2 and 3 will be the focus of the arts/cultural and mixed-use district (Objective 12, Policy 2). Construction must also comply with applicable provisions of the Secretary of the Interior's <i>Standards for Rehabilitation</i>	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.

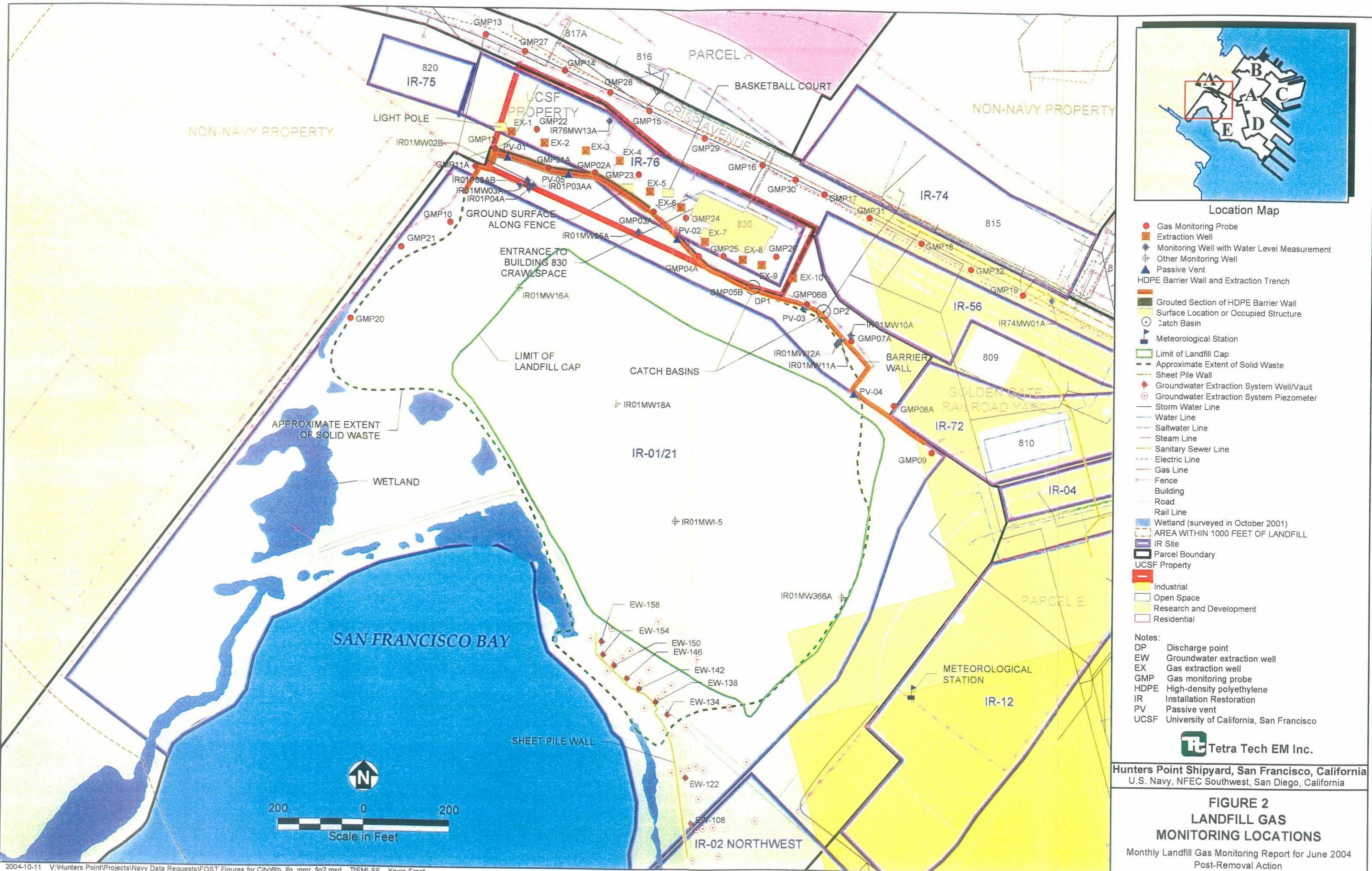
Hunters Point Shipyard – Parcel A Development: Mitigation Planning for Protection of Human Health and the Environment

Mitigation Measure from EIR and Guidelines for Rehabilitating Historic Buildings.	Developer Action to Implement	Implementation Schedule	Oversight and/or Monitoring Responsibility	Monitoring Actions/Schedule
12.D. Archeological Resources Require contractors to be made aware of the potentials for discovery of archaeological resources. If development in the four subsurface zones identified as having the potential for containing significant archeological deposits involves construction or installation below the level(s) of fill, retain a professional archaeological to develop a project-specific treatment or monitoring program. If archaeological resources are discovered during construction, suspend all work in the immediate vicinity. Avoid altering the materials and their context pending site investigation by a qualified professional archaeologist. If the qualified professional archaeologist determines that the discovery is significant, notify the SHPO and ensure that an appropriate treatment plan is developed and implemented.	Developer to include the Planning Department's "Alert Sheet" in each set of construction specifications. Developer to retain archaeologist to prepare treatment and monitoring program if excavation would occur below level of fill in a zone identified in Figure 21 of the "Archaeological Inventory and Assessment of Hunters Point Shipyard." Program will include requirements of this measure.	Developer to submit copies of Alert Sheets to Environmental Review Officer prior to construction. Developer will retain archaeologist prior to construction in any of the relevant four subsurface zones.	SFRA through the DDA, SHPO.	SFRA and Environmental Review Officer to monitor during construction. SHPO.
13.A. Wetlands Habitat Protection Place barriers along the Bay side of trails to reduce human and domestic animal disturbances to sensitive wetland habitats. Design barriers so that wildlife cannot hear or see people from foraging areas and so that people cannot easily leave the trail to enter sensitive wildlife areas. Develop and implement a public access program to include fencing sensitive areas, posting signs, and imposing leash requirements to further reduce disturbance to wetland areas.	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.	Not applicable to Parcel A.
13.B. Litter Control Provide adequate trash receptacles along public access areas. Ensure pick-up and trash receptacle maintenance on a regular basis.	Developer to include in street improvement plan as part of Infrastructure Plan as required by DDA, Attachment 9.	Included in street improvement plan.	SFFA through DDA, DPW through plan/permit review.	SFRA, DPW through infrastructure construction.



Attachment M

Parcel A Hunters Point Shipyard
 Article 31
 Permit Process Flow Chart



Hunters Point Shipyard Parcel E Landfill Fire

San Francisco, California - January 2001

ATSDR's Health Consultation

In November 2000, the U.S. Environmental Protection Agency (EPA) requested that ATSDR evaluate sampling data related to the 14-acre Parcel E Landfill fire on Hunters Point Shipyard, which burned for six hours August 16, 2000. Several areas, less than five acres, continued to smolder for nearly one month. ATSDR analyzed the data and prepared a *health consultation* document to address the likelihood that people in the Bayview/Hunters Point community could experience adverse health effects from their exposure to components released during and after the fire. A health consultation responds to specific requests for information about health threats related to a particular site or hazardous material. This summary contains our public health evaluation and addresses concerns the community has expressed to ATSDR.

ATSDR's 1994 Public Health Assessment

In 1994, ATSDR published a public health assessment for the Treasure Island Naval Station, Hunters Point Annex. A public health assessment is a comprehensive evaluation of human exposure to hazardous substances. Parcel E Landfill was one of the sites evaluated as part of the public health assessment. ATSDR identified the potential for exposure to hazardous substances at that time. Methane pockets within the landfill were noted as a public health concern to be further addressed by the Navy. The Navy collected additional methane samples

ATSDR's Health Message

Exposure to Fire Components: ATSDR determined components (chemical and physical) released from the fire August 16, 2000, could have caused reversible, short-term adverse health effects in people exposed. Health effects could include burning, itching, or watery eyes and sinuses; headache; nausea; breathing difficulty; and asthma-like symptoms. Individuals highly sensitive to the effects could be anyone with previous respiratory conditions such as asthma or emphysema, and also children and the elderly. Health effects would be of short duration, developing within a few days of exposure and lasting no more than two or three weeks after exposure stopped. The Bayview/Hunters Point community already has a high incidence of respiratory diseases.

Exposure to Smoldering Components: Air sampling data collected 15 days after the fire was extinguished, but during the smoldering and since that time, do not indicate a release of chemical or physical components likely to result in adverse health effects.

Recommendations: As a way of reducing exposures to this vulnerable population, ATSDR recommends the Navy notify the Bayview/Hunters Point community of any planned or unplanned air releases that have the potential to move off base.

Additionally, ATSDR recommends the Navy conduct air monitoring during planned events that are likely to release particulates or chemicals into the air.

throughout the landfill. More methane sampling is being conducted as part of the ongoing subsurface monitoring program. Additionally, methane will be investigated again in spring 2001. ATSDR will evaluate the data as it becomes available and make recommendations in order to help assure the safety of the people who could potentially be affected.

For More Information:

Contact Bill Nelson, ATSDR Regional Representative, at 415-744-2194 or 1-888-422-8737.

ATSDR

The Agency for Toxic Substances and Disease Registry (ATSDR) is a non-regulatory, federal public health agency. ATSDR is within the U.S. Department of Health and Human Services. Created by 1980 Superfund legislation, ATSDR evaluates human exposure to hazardous substances released into the environment and makes recommendations to stop or prevent such exposures to protect public health.

Community Concerns



ATSDR spoke with several community members, local health officials, and health care providers in the Bayview/ Hunters Point community closest to the Hunters Point Shipyard who had the following concerns.

How do you know the health problems of people in the Bayview/Hunters Point community are short-term?

The reason we believe health effects will be reversible and short-term is based on ATSDR's review of the scientific literature including medical reports and other information that detail 1) the chemicals that could have been released by the fire 2) the likely health effects from those chemicals, and 3) the health effects seen in firefighters and in communities near various types of fires. The fire information we reviewed included landfill fires, railroad tie fires, and forest fires. Reports of human exposure to fire components under similar circumstances lasting less than one year showed only short-term health effects. No long-term health effects were reported. Based on the duration and extent of the fire, distance of the fire from the community, and most frequent wind direction, our conclusion is people breathing the components released by the Hunters Point Shipyard Parcel E Landfill fire may have experienced health problems such as burning, itching or watery eyes and sinuses; headache; nausea; breathing difficulty; and asthma-like symptoms that would have started within a few days after exposure and lasted no more than two or three weeks.

Without sampling data collected during the fire, how do you know the fire was not a "toxic fire?"

ATSDR assumed the fire burned "toxic" or harmful materials such as railroad ties as well as sawdust, brush,

and grasses. Because sampling data was not collected during the fire, we used existing information from other landfill fires, railroad tie fires, and forest fires to predict whether people were likely to experience health problems from breathing the components released by the Hunters Point Shipyard Parcel E Landfill fire. Although the fire would have been "toxic," the effects would be of short duration.

Have there been landfill fires at Hunters Point Shipyard before?

The Navy told ATSDR there have never been any other fires on the Parcel E landfill. However, there have been fires in other areas of the Hunters Point Shipyard such as grass fires, empty metal fuel tanks, and building fires. None of the previous fires were this large, therefore the off-site community should not have long-term effects. However, we are recommending future air releases be reported to the community.

If I smelled smoke, am I likely to have health problems as a result?

Not necessarily. Being able to smell smoke is based on its odor threshold. A chemical's odor threshold is the lowest concentration of that chemical in air that people can smell. The concentration of many chemicals that emit detectable odors is much lower (often 10 to 1000 times lower) than the amount of chemicals likely to cause health problems. Even though people differ, some health conditions such as asthma may be triggered by certain odors even though the concentration of chemicals is much lower than what is required to cause a toxic effect.

Is there a fire currently burning underground in the Parcel E landfill?

Air monitoring stations have been collecting data for 24 hours a day since September 8, 2000 and have not

detected any of the components that would be released from an underground fire. September 22, 2000, the Navy made a thermal image of the area, which did not show any hot spots on the surface of the burned area. As a final measure to ensure there are no remaining subsurface smoldering areas, the Navy is conducting subsurface monitoring of temperature and fixed gas concentrations. Preliminary results indicate there is no continued subsurface smoldering. A final report is expected by March 2001.

If the current chemical contaminant levels from Parcel E are safe, why does the Bayview/Hunters Point community have so many health problems?

Numerous city, state, and federal health care groups are working to determine why the Bayview/Hunters Point community has so many health problems, but it is not known at this time. It is a widely reported fact that the Bayview/Hunters Point community has higher than average incidence of asthma, respiratory disease, diabetes, lung cancer, and other health problems. However, the rates here are similar to other urban communities with numerous industries and similar economic and demographic makeup. No one factor has proven to be the cause, but it could be a combination of factors such as exposure to industrial pollutants, access to medical care, or lifestyle and dietary factors.

How can the situation change so the community is informed of similar events in the future?

The Navy, along with community members, U.S. EPA, and local agencies, began meeting approximately every three weeks to discuss and develop notification procedures for the community in case of future events.

Full Report ⇒ <http://www.atsdr.cdc.gov/HAC/PHA/hunterspoint/hvn-toc.html>